ELECTRON HYDRO, LLC

REQUEST FOR PROPOSALS

CONSTRUCT DIVERSION REPAIR, SPILLWAY REPLACEMENT AND BANK PROTECTION (PHASE 1C)

ELECTRON HYDRO, LLC
19318 ELECTRON ROAD EAST
ORTING, WA 98360

Thom Fischer P.E., COO/Manager

Kim Moore P.E., Project Manager

Date: December 12, 2019

Each proposal to be mailed to Electron Hydro, 19318 Electron Road East, Orting, WA 98360

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I. INTRODUCTION

Electron Hydro LLC "owner" is soliciting for Request for Proposals from qualified general contractors for construction of Phase 1C of the Electron Diversion Repair, Spillway Replacement and Bank Protection project.

Work will generally include working with Electron staff to finalize all construction drawings, being involved in selection of owner supplied spillway air bladder, and trash rack systems to be integrated into final design and constructing all agreed upon portions of the work. Final contract will detail all construction requirements and materials that will be provided by the owner.

This project is planned to commence on contract issuance and extend through all work required for Phase 1C including project commissioning. The owner reserves the right to extend the contract through 2022 to allow for construction of Phase 2 should both parties reach agreement on terms, conditions, and price.

Responses to the RFP must include estimates for construction of Phase 1C as detailed in the bid set and should include all proposal submitted information detailed herein.

II. BACKGROUND

The Electron hydropower project was completed and began generation in 1904. The project operates in a run-of-river mode and therefore does not store water. Water from the Puyallup River is diverted at the Intake at river mile 41.7, approximately 10.2 miles upstream of the powerhouse (approximately a 30 minute drive from the project office via logging roads). The diverted water travels by wooden flume, within a steel framework, dropping 7 feet per mile until it reaches the forebay. From the forebay water passes through four steel penstocks dropping 870 feet in elevation to the powerhouse where four Pelton wheel turbine generator sets produce up to 26 MW of electrical energy.

The Intake Project involves the removal and repair of the wooden diversion structure, replacement of the existing spillway with a 70-foot long by 12-foot diameter air bladder system, downstream left bank retaining wall and reinforcement of the shoreline both upstream and downstream with rip-rap protection.

The purpose of the project is to minimize the induction of fish, sediment and bedload into the flume system. This will be achieved by maintaining the riverbed elevation below the intake elevation, allowing bedload to pass through the diversion structure instead of piling up behind it, settling and removing fine sediment and excluding fish with a screening and return-to-river system.

The spillway design will concentrate river flow into a spillway channel approximately 1/3 the width of the 200-foot wide diversion structure, thereby notably increasing the channel velocity through the spillway during periods of high and extreme flows. As a result, the bladder spillway design must be constructed to exact specifications with the required materials in order to maintain structural integrity for decades of service. The structure will need to endure the estimated 100-year storm event volume (18,000 cfs) and velocity (18-22 fps).

The project is being carried out in a multi-year manner, in part because the in-water construction period is severely limited to the period between July 15th and September 15th. The time period is determined by the local, state and federal resource agencies and is based on the period least likely to have an adverse impact on salmonids. Stringent permit conditions are due to the presence of three ESA listed species; Chinook, Steelhead and Bull Trout. Permit conditions from the three levels of government are synchronized and intended to reflect the conservation needs of the listed species as the highest priority.

In addition, the local Puyallup Tribe is a fisheries co-manager and stakeholder in the Puyallup River system, working closely with Electron staff to ensure the protection of all fish and wildlife species associated with the river system. Electron maintains open and transparent communication with all agencies and tribes.

III. PROJECT SCOPE

Electron plans to issue one (1) contract for the work detailed in Phase 1C Electron Diversion Repair, Spillway Replacement and Bank Protection project. Work for this project includes:

A. Bid Item 2 (Construct Diversion Repair, Spillway Replacement and Bank Rap Protection)

1. Place coffer dam within the Puyallup River and perform all dewatering activities for duration of the project.
2. Demolish portions of existing Electron wood crib/rock filled diversion dam including the existing 6' high by 30' wide spillway.
3. Excavate site to subgrade.
4. Construct new spillway foundation including left and right abutments wing walls.
5. Install pneumatic piping, reinforced concrete, electrical/communication conduits and embedded anchorage to support installation of an owner supplied 12' high by 70' wide spillway air bladder.
6. Construct new upstream left embankment intake wall which will be structurally tied into the existing reinforced concrete intake.
7. Install 36" and 48" diameter steel pipe, radial sluice or slide gate and clean out access within the left embankment intake wall to provide a sand sluicing system to reduce sand infiltration into the flume.
8. Install electrical, communication and spare conduits conduits and owner supplied steel tracks and bar grate trash rack to support an owner supplied trash rack cleaning system including two stilling basins.
9. Construct a sluicing system to include 36" and 48" piping slide or sluice gate, electrical/communication/control cabling and two stilling basins.
10. Construct a reinforced concrete 200' long left bank protection wall downstream of the spillway.
11. Install owner supplied 12' high by 70' wide air bladder and trash rack system.
12. Place approximately 90' of 3-4-man rock wall upstream of the project to tie into work constructed in Phase 1A.
13. Place approximately 90' of 3-4-man rock downstream of the left bank protection wall to tie into work constructed in Phase 1B.
14. Rebuild the wood/crib/rock filled diversion and connect to the new spillway's right abutment wall.

15. Provide a temporary weatherproof exterior enclosure for placement of trash rack cleaning system, radial gate and air bladder controls including pulling all required control and power cabling to a designated location.
16. Remove all dewatering equipment and return river system to normal as required by permits.
17. Demobilize and cleanup work site.

    NOTE: Upon completion of all work in Phase 1C, the owner and contractor will meet to discuss contractor's involvement in design and construction of Phase 2 including associated scope of work and pricing.

IV. WORK PLAN

The following section describes the services that the selected contractor will be required to provide for the project. The following generally defines the work involved in each task. The contractor shall prepare costs for each task and determine who within their firm that would be involved.

The intent of this contract is to hire a contractor to work with Electron's in house staff to finalize the construction drawing including integration of the air bladder spillway and trash cleaning systems which are to be purchased by owner after selection of the general contractor and then constructing agreed upon work to ensure the project meets the required objective, schedule and budget. The intended work after signing of the contract includes:

TASK 1 – PROJECT DESIGN

This phase will include the following:

1. Upon signing of the contract, the contractor shall meet at Electron's Project Office for at least one day meeting to review the current drawing set, overall Phase 1C schedule including owner's schedule for procuring air bladder, radial gate and trash rack cleaning system and other work to date. The intent of this meeting is to provide input on constructability concerns, value engineering ideas, specifications, sluicing system, gate design, and other design work the owner should perform to prepare a final set of construction drawings.
2. The contractor will also be required to review the 90% draft of the procurement contracts for both the air bladder, radial gate, and trash cleaning system and provide any suggested edits or concerns.
3. Upon receipt of the proposals for all owner provided materials, the contractor shall preview these proposals and provide input to the owner on the various equipment including concerns for construction, durability or experience with similar equipment or the vendor.
4. It is the intent of the contract to form a partnership with this contractor so it is expected contactor would work with owner on any ideas to improve or enhance the project.
5. Once all revisions to the design have been accomplished, the revised Bid Set drawings will be provided to the contractor for final review and comment which may require a few iterations. Upon completion of the construction drawings, the contractor will be required to provide any pricing changes for the original proposal to the owner for review and acceptance. Any revised cost, if any, should be accompanied with a justification for any increase or decrease.
6. In this task the owner and contractor will also agree as to:

    a. All materials to be provided by owner prior to or during construction.

b. All work that would provide cost savings if self-performed by the owner.

c. What level of quality control, inspection or survey control would be provided by the owner.

d. Lay down area, temporary facilities, improvements or utilities that would be preinstalled by owner.

e. All other delineations of work required to ensure a firm pricing schedule prior to construction.

7. Contractor to provide an overall project schedule to envision work is completed within the two months' work window (July 15 to Sept 15). NOTE: It is the owner's intent to operate the project for power production up to the in-water work window.

TASK 2 – PROJECT CONSTRUCTION

1. Construct all work required for Phase 1C as detailed in Section III to provide a complete and operable facility.
2. Clean up of site to allow for normal operation and testing.

TASK 3 – EQUIPMENT COMMISSIONING

1. As required, the contractor shall keep key personnel on site until complete commissioning of the air bladder, radial gate, and trash cleaning systems.

TASK 4 – PROJECT CLOSE OUT

1. Contractor to provide red lined as-built drawings to the owner to allow appropriate plan revisions for any agreed upon changes.
2. Contractor shall meet with owner to review work in Phase 2 planned for construction in 2022. This meeting would be to review overall project schedule, contractor's involvement, and any design concerns.
3. As part of this task, the owner and contractor will agree on a pricing schedule for as needed work prior to development of a construction set of drawings and final pricing for Phase 2.

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V. SCHEDULE

The schedule for this proposal as follows:

Advertise RFP	Dec. 12, 2019
Pre-Bid Meetings(s)	Dec. 18 & 19, 2019
Open Proposals	Jan. 7, 2020
Owner Short Listing of Contractors to be interviewed	Jan. 14, 2020
Contractor submittal of bid supporting documents	Jan. 16, 2020
Interviews with Selected Contractor	Jan. 20-23, 2020
Determination and selection of Contractor	Jan. 28, 2020
Negotiation and contract finalization with selected Contractor –	February 2020

Initial design meeting	Feb./March 2020
Other meeting on equipment or design	As Required
Start Phase1C construction (in water only)	July 15, 2020
Complete Phase 1C construction (in water only)	Sept. 15, 2020

As the project requirements are aggressive, the contractor should identify areas where they do not believe the schedule is reachable.

VI. PRE-SUBMITTAL QUESTIONS

Pre-bid meetings will be held on both December 18, 2019 and December 19, 2019, at 9 a.m. at the Electron Project office to be immediately followed by an intake site visit.

Questions from bidders should be submitted to Kim Moore, Project Manager, at work (360) 761-1599 or cell (425) 530-6936, which will then be discussed or answered at the pre-bid meeting if deemed appropriate. Should questions result in the need for clarification to the RFP, an addendum will be sent to all prospective bidders.

Additional questions to be included in the contractor's response to this proposal are included in Appendix A.

VII. COSTS TO PREPARE PROPOSAL

The owner will not be liable for any costs incurred by the contactor in preparation of a proposal submitted in response to this RFP, in the conduct of interviews, or any other activities related to responding to this RFP.

VIII. PROPOSAL SUBMITTAL

All interested parties shall submit electronic submissions to Doris@electronhydro.com with a copy to Kim@electronhydro.com no later than 11:00 a.m. on or before January 7, 2020.

Submit any written correspondence to:

Electron Hydro, LLC

Attn: Doris Hyland

19318 Electron Road E.

Orting, WA 98360

Any information submitted shall become the property of the owner. Any confidential information must be clearly marked.

IX. BID PROPOSAL COSTS

A. Construction Cost for the various tasks described in Section IV Work Plan

1. For Bid Item 1 the Contractor should indicate the cost for the work detailed in Section IV – Task 1. (Bid Proposal Item 1)

   For bid comparison purposes the proposal includes an estimated number of hours that will be required of the contractor's Project Manager and site superintendent during the design finalization process. Resumes of these two individuals must be included in the contractor's proposal.

These hours are divided into on-site and off-site hours and will be paid accordingly.

a. On site hours – These hours will include meeting at the Electron Project office or other locations as agreed upon by both parties for design meetings to cover a range of design or construction issues, integration of materials to be supplied by other contracts, value engineering or other issues. Agendas will be prepared for these meetings and will be scheduled such that contractors will be guaranteed six hours for any scheduled meeting. Actual payment will be paid from the published start of the meeting until adjournment of that meeting. Travel time will not be paid for this bid item. Owner will work with the contractor in advance to determine which of the contractor's employees is required to attend.

b. Offsite hours – These hours will be paid for work conducted by the contractor, as directed by the owner, at the contractor's office. Prior to commencing off site hours the contractor and owner shall agree on a not to exceed maximum number of hours for each project personnel and the scope for these off-site hours (i.e. 4 hours of Project Manager input into vendor selection of trash rack cleaning system). Should contractor require additional hours beyond those agreed upon for a specific task they shall contact owner for approval prior to conducting said work.

   NOTE: Telephone calls to discuss various tasks, schedule meetings, or gain clarification shall be considered incidental to the overall contract and will not be paid for specifically.

   Actual payment for these bid item will be based on the actual number of onsite or off-site hours for each specialty and will be reduced or increased accordingly.

2. For Task 2 the Contractor shall provide a firm, lump sum cost for work included in the bid set and as detailed in Section III. Contractor shall include any exclusions to that lump sum bid when work scopes cannot be assured from the bid set. (Bid Proposal Item 2)

   The contractor's bid costs for bid Item 2 shall be supported by a detailed bidding software spreadsheet that clearly indicates labor, equipment, materials and all other costs required for all work as detailed in the bid set drawings (Appendix H) and the project scope as detailed in Section III and IV, Tasks 2 through 4.

   The Contractor shall either resubmit this supplementary bid information with their bid or at a minimum 24 hours after being notified that they have been short listed for an interview with the owner.

   Once this document has been accepted by owner, it shall be used as the basis for any design changes between the bid set of drawings and the final construction drawings prepared for this project.

   Note: Once the final construction set of drawings has been agreed upon, the contractor shall detail all design/construction revisions from the bid set of drawings and prepare a detailed document comparing changes in labor, equipment and material costs from the document submitted in the selection process and the reasons for each change. This document will be used to help finalizing costs for Bid Item 2 and these costs shall be agreed upon by both parties prior to issuance of the Notice to Proceed for Bid Item 2 by the owner.

3. Bid proposals that include a lump sum for portions of Phase 1C work and unit bid costs for certain portions will be accepted by the owner.

4. While the overall cost of this project is of high importance to the owner, other factors will be factored in making the final contractor selection. These include but are not limited to:

A. Construction and design costs as detailed in Section IX, and Appendix F.

B. Firm's prior experience with similar projects and/or technology.

C. Project Manager's or Site Superintendent's experience with similar projects and/or technology.

D. Resumes and experience of key staff identified to be committed to working on the project (Project Manager, Site Superintendent, or office support). Only submit resumes for those individuals who would be directly involved in this project.

E. Ability to meet the schedule indicated in Section V – Schedule or suggestions to improve upon the proposed schedule.

F. Company location and ability to respond to emergencies, general inquiries, and site visits.

G. Understanding of the project scope of work, and preliminary ideas presented by the contractor as part of the proposal or interviews.

H. Response to specific questions that are included as Appendix A.

I. Exceptions taken to Electron Hydro's standard consultant contract provisions (Appendix C)

J. Other criteria as agreed upon by the owner.

After the contractor is selected by the owner, all other Contractors will be notified.

Electron Hydro, LLC has the option to: 1) reject any or all proposals, 2) issue subsequent RFP's, or 3) request that further information be presented by the Contractors in order to complete evaluations.

A contract will be negotiated with the selected contractor. If a contract cannot be negotiated, Electron Hydro reserves the right to begin negotiations with other contractors.

X. GENERAL REQUIREMENTS

The performance of the described tasks must be fully coordinated with identified Electron Hydro, LLC employees once the scope and timing of each contract task is clarified and a Notice to Proceed is issued on that task.

When a contractor is selected under this RFP, representatives from the contractor and the contract manager from Electron Hydro, LLC will meet to prepare the final contract terms, compensation to be provided, and will enter into an agreement for the work. The following provisions will apply:

A. **Cost/Schedule Control**: Each month, a report detailing the work performed and the cost of the work for the previous month, along with a comparison to estimated expenditures and work progress shall be submitted. A Gantt Chart or other scheme will be utilized by the consultant to track the overall project schedule and costs.

B. **Compensation**: The overall contract and each Notice to Proceed for subtasks shall contain a not-to-exceed clause, which cannot be exceeded without written approval from Electron Hydro, LLC.

C. **Change Orders**: Whenever it becomes apparent that a change in the scope of work is required beyond the scope defined in the final construction set, the contractor shall notify and define the additional scope of work and estimated expenses and submit to the owner for approval. The contractor and Electron Hydro LLC shall negotiate an agreement on the changed scope of work prior to work being performed.

D. **Contract**: Any resulting contract will be subject to the standard requirements, terms, and conditions of Electron Hydro, LLC covering such contracts. Attached is a copy of Electron Hydro's standard consultant contract (Appendix C). Please indicate with your proposal which terms and conditions your firm would take issue with including proposed language. (NOTE: Preference will be given to the firms that agree to sign the consultant contract with no modifications.)

XI. PROPOSAL GUIDELINES

Those contractors who want to be considered must provide in their proposals the specific information requested below. To facilitate the evaluation process, organize your firm's proposal according to the following subjects.

PROPOSAL FORMAT:

A. **Statement of Qualification** – Firm or Individual: Describe the general experience and expertise your firm as had with similar work.

B. **Scope of Work** – Separately describe specific experience your firm has with work identified in Section III -Project Scope. Also, discuss ideas and methods your firm would propose to be included to the contract to improve the overall project or reduce project cost. Answers to questions detailed in Appendix A should be included in your discussion of each of these tasks as applicable.

C. **Project Management/Staff**: Give the names and relevant background and experience of the key personnel who would be directly involved in tasks listed in the Scope of Work covered by this RFP. Describe the approach your firm would use in dealing with these tasks. Additional resume and credential information should be included in a separate section of the proposal.

D. **Preliminary Ideas**: Based on the bid set drawing plan, and other information that may be obtained by the Contractor, provide preliminary ideas for improvements on the proposed work plan. Information and ideas presented in the proposal or during the selection process will be available for use by Electron Hydro.

E. The remainder of the proposal may be structured as desired by the consultant and should include:

   1. Any suggestions as to a change in the scope of work, tasks, schedule, or additional studies recommended.

   2. A listing and qualifications of any sub-contractors who may be used during the work or that the contractor recommends be included in the team.

   3. Responses to the questions included in Appendix A.

APPENDIX A

QUESTIONS – REQUEST FOR PROPOSAL

1. It is the owner's intent to have some full day meetings, 6 – 8 hours to review certain design elements after issuing the contract. The owner, owner's engineer, and project manager would attend along with potential consultants. Who would the contractor have attend these meetings? Please list any of the design elements you feel should be reviewed to help improve constructability, project design intent or reduce overall project cost.

2. The owner is concerned about the overall project cost and has reviewed various scopes of work that could be self-performed to reduce the overall cash outlay on the project. These include:

   a. Stockpiling the 3-4-man rocks for bank protection and spillway floor on site prior to the contractor mobilizing.
   b. Stockpiling sand and gravel on site for use in a concrete batch plant or volumetric concrete truck operation.
   c. Performing coffer dam construction and spillway demolition at project initiation.
   d. Installing owner supplied air bladder spillway after installation of anchorage, conduits, pneumatic piping and ancillary by contractor.
   e. Installation of owner supplied trash rack cleaning system after installation of rail, conduits and ancillary systems by the contractor.
   f. Please explain any other ideas you might have on how to control costs on the project and reduce the risk of change orders moving forward.

   Please include a discussion as to overall project costing would be affected should any of these options be included in final contract.

3. Owner has discussed the idea of using precast concrete panels for the downstream left embankment retaining wall in lieu of a cast in place wall system. In addition, cast in place panels have been discussed for use as part of the abutment forming to reduce in water work time requirements. Please indicate your ideas about premanufacture project components to reduce cost or assist in meeting the tight in water work window.

4. Please detail your experience with similar projects here if not explained elsewhere in the proposal.

5. What do you think is the best way to ensure quality control of the work? Independent quality control subcontractor? Owner? Use of contractor's independent quality control system?

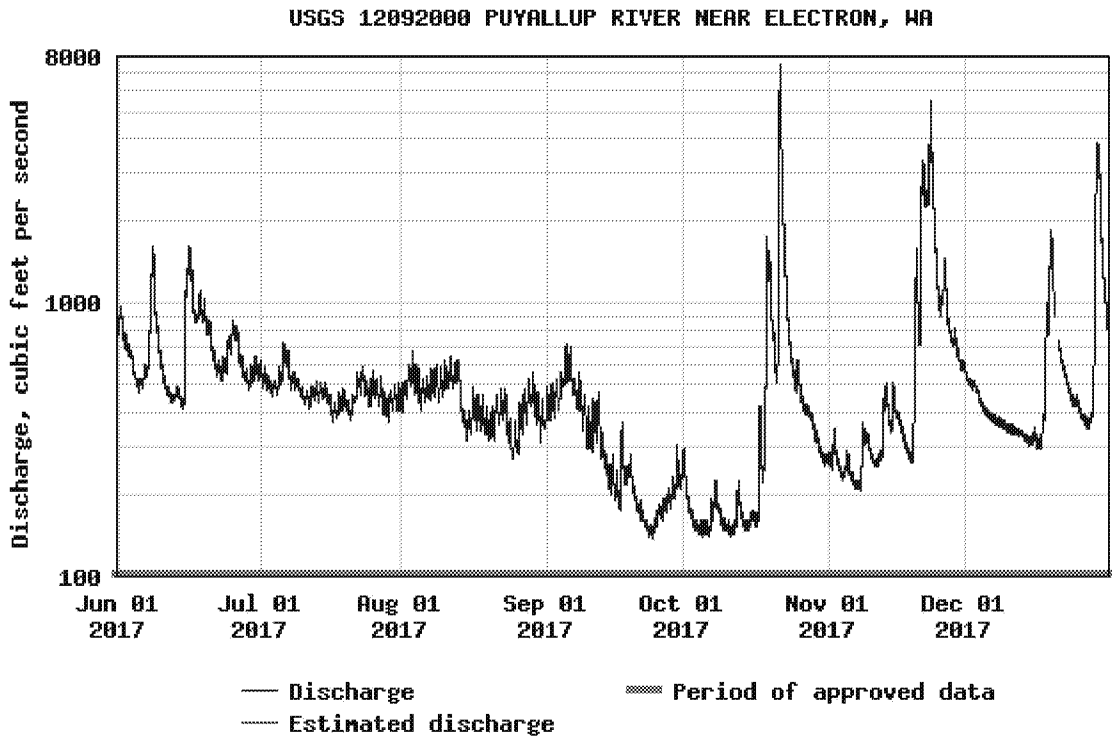
6. What temporary support facilities would you suggest your firm provide and which would you expect owner to furnish?

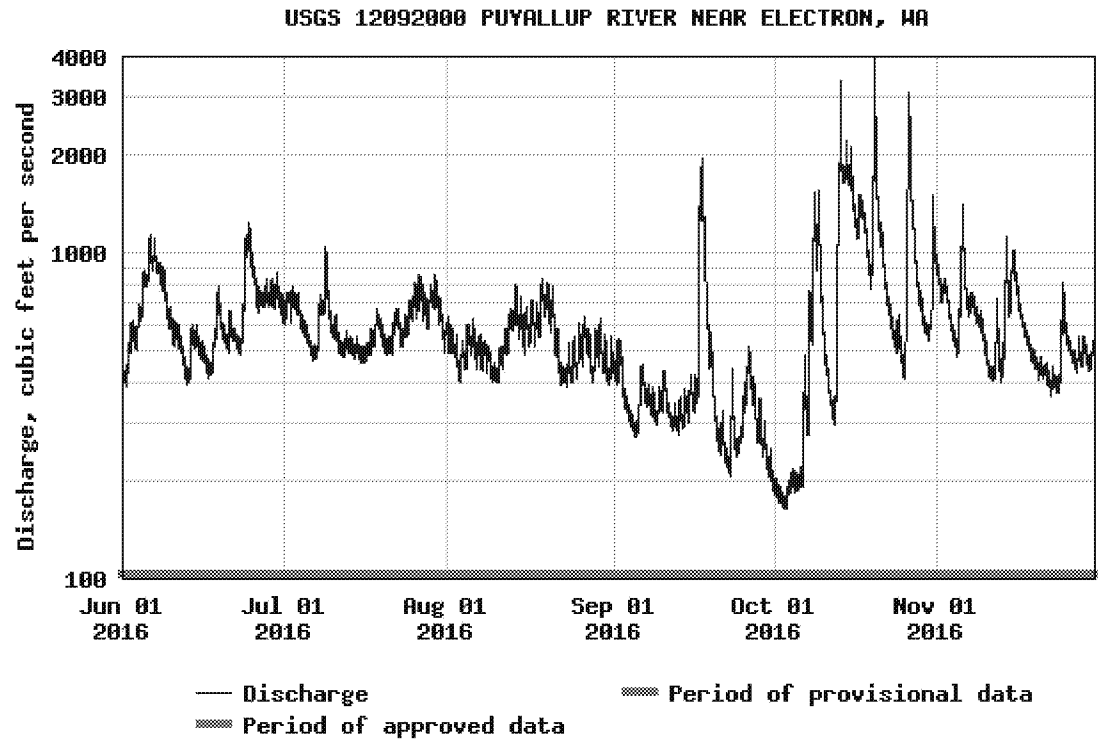
7. Please indicate any revisions to the overall project schedule that could assist in project success.

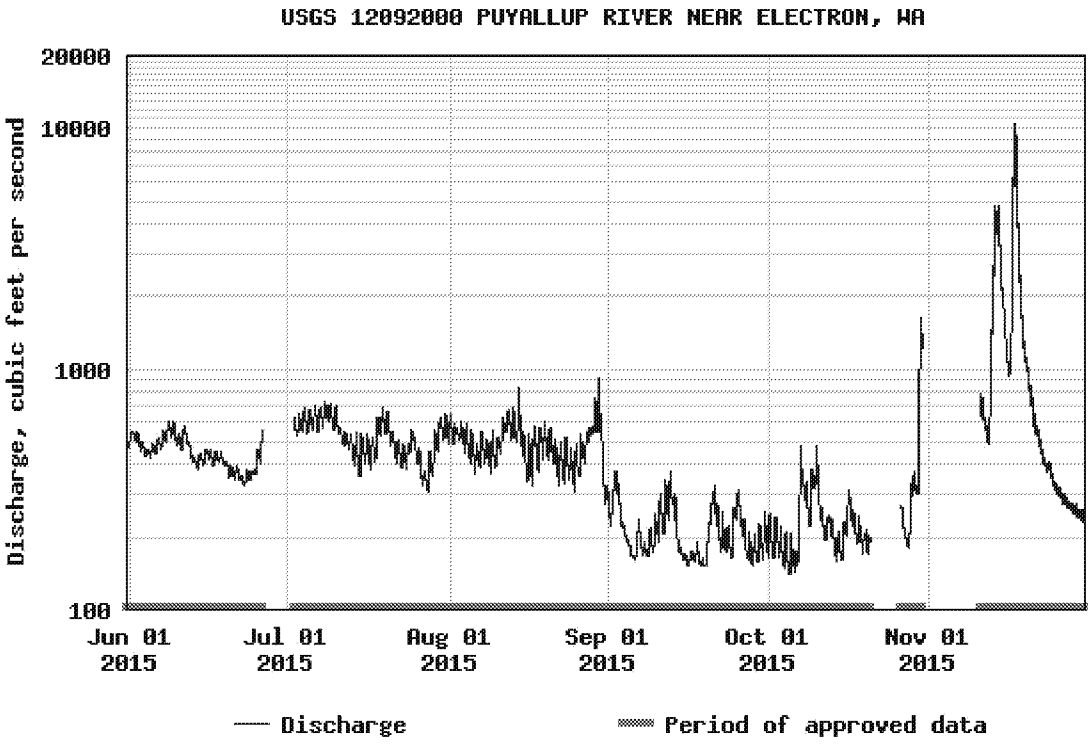
8. The owner is attempting to gain permit approval to place slurry concrete between the Contractor placed rip rap downstream of the spillway on the riverbed and portions of the banks. Please include in your proposal an alternate bid item to place 2,500 cy of slurry concrete (2,000 psi: high slump) in these locations.

APPENDIX B

PUYALLUP RIVER FLOW HISTORY 2012 – 2017



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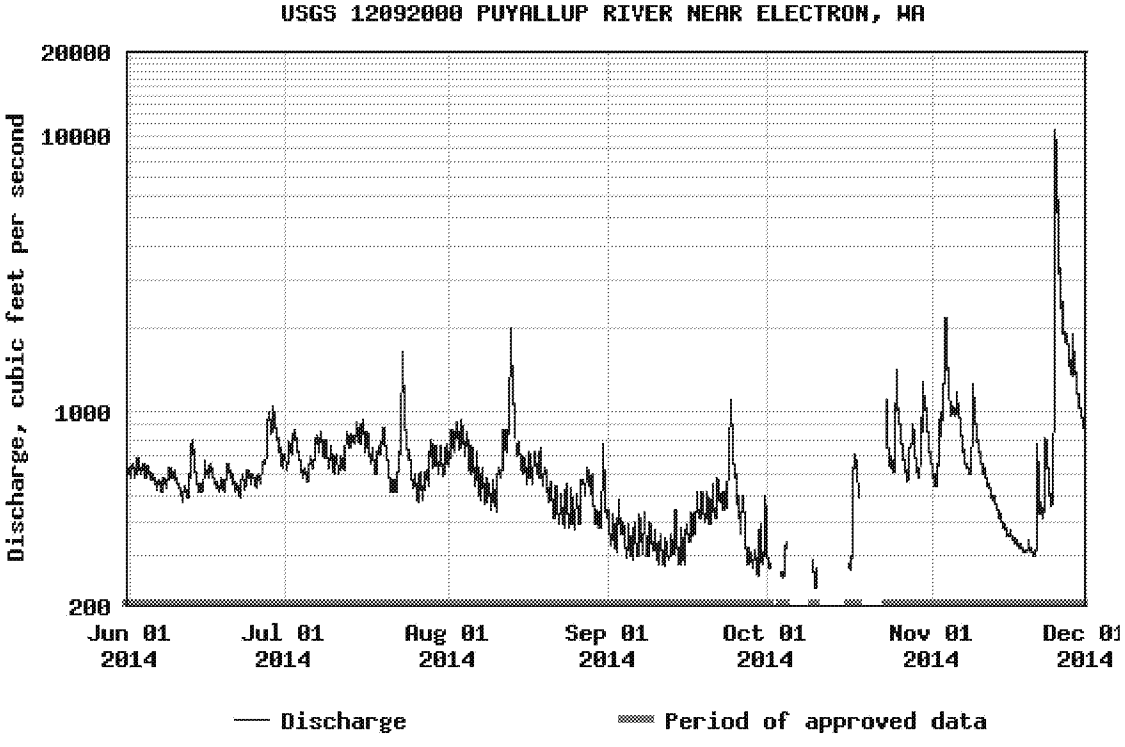
Period of approved data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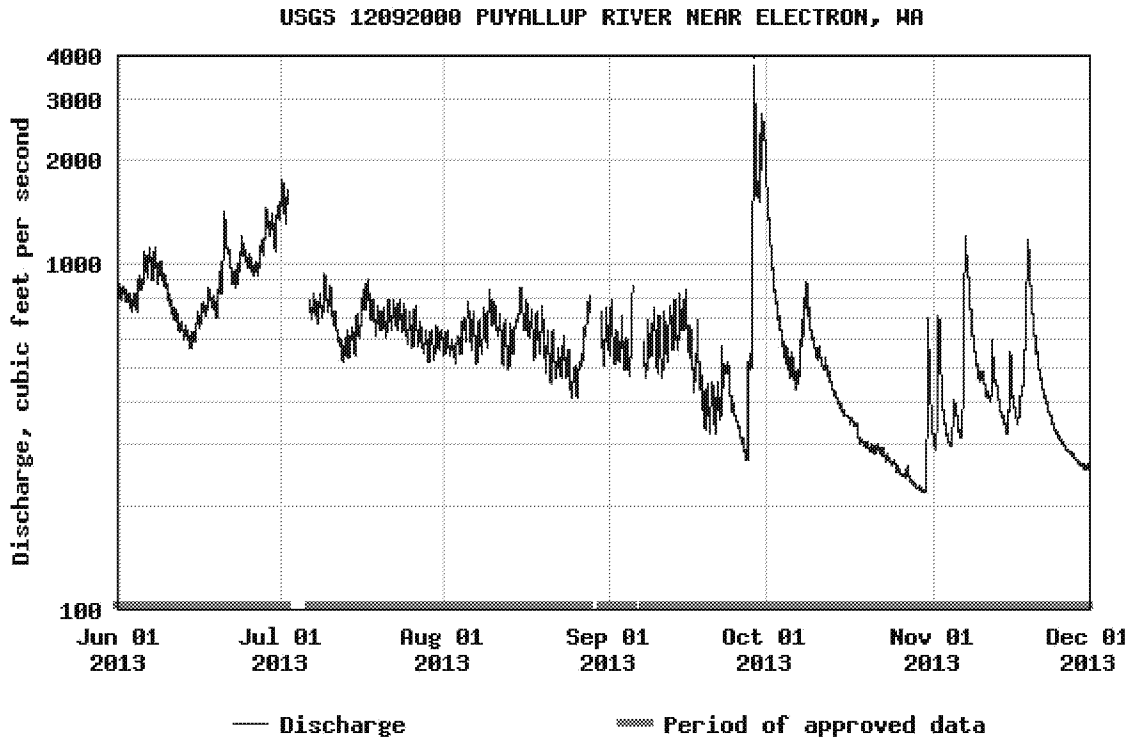
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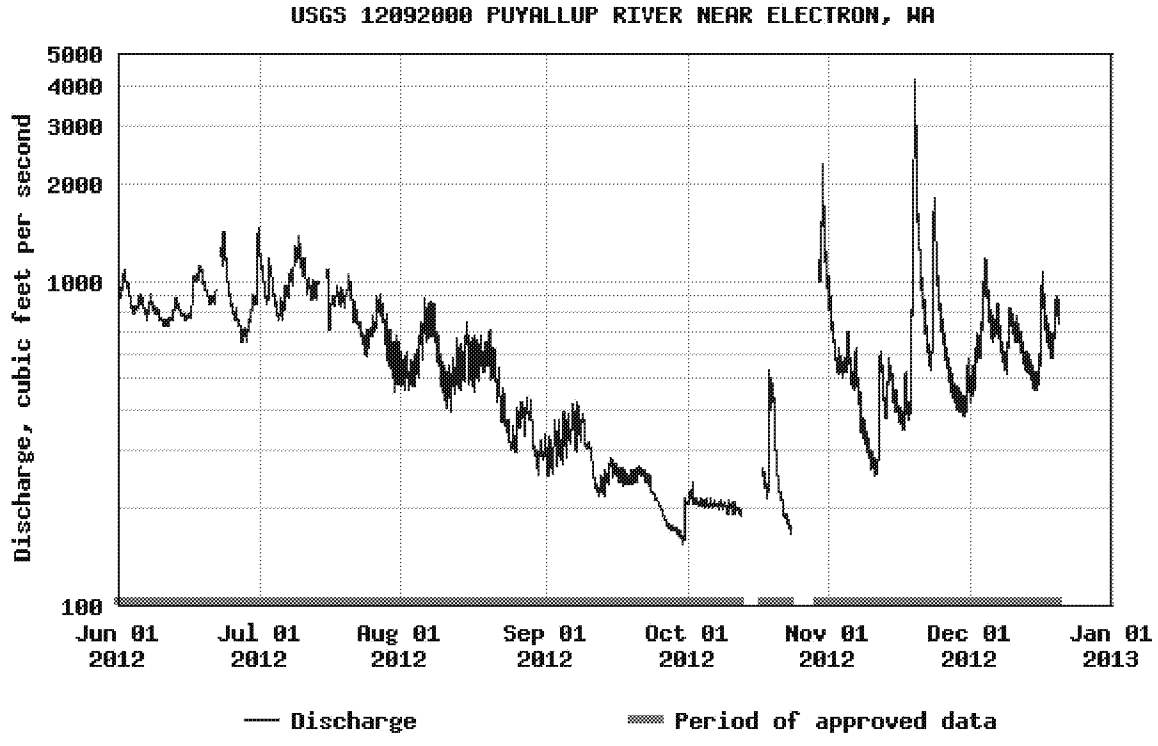
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Aug 01 2012
Sep 01 2012
Oct 01 2012
Nov 01 2012
Dec 01 2012
Jan 01 2013
Discharge
Period of approved data

APPENDIX C

PROFESSIONAL SERVICES CONTRACT

Standard Conditions

Contractor agrees as follows:

A. BEFORE COMMENCING WITH WORK the Contractor shall provide Owner with:
1) A Certificate of Insurance, which names Owner as an **additional insured** for this Project stating that the policy is primary and noncontributory with any other insurance maintained by Owner. All policies of insurance shall provide not less than forty-five (45) days advance written notice to Owner of cancellation or material change.
2) Any required submittals.

B. PAY REQUEST:
1) Contractor must provide sufficient detail to substantiate the requested amount.
2) Invoices must be submitted by the 5th day of the month for all work completed in the prior month.
3) Payment will be made to Contractor within 30 days of receipt of approved invoice with required documentation.

C. BEFORE THE FINAL PAYMENT CAN BE RELEASED the Contractor must provide Owner with:
1) An Unconditional Release of Lien and Claim in an Owner-approved form.
2) Project documents, O&M manuals, and as-built drawings etc. as may be required.

Type of Insurance	Amount	
Workers compensation	Statutory	
Employers Liability (WA stop gap)	1,000,000	Each Accident
	1,000,000	Disease Policy Limit
	1,000,000	Disease Each Employee
Commercial General Liability	2,000,000	General Aggregate
	2,000,000	Products & Completed Operations Aggregate
	1,000,000	Personal Injury
	1,000,000	Each Occurrence
Automobile liability – Combined Single Limit	1,000,000	Each Accident

D. INSURANCE. Contractor shall obtain and keep in force during the term of this Contract comprehensive general liability insurance with dollar limits and coverage not less than the types and amounts of coverage noted below:
E. INDEMNIFICATION.

1) Contractor agrees to defend, indemnify, and hold harmless Owner from any and all claims, demands, losses, and liabilities to or by third parties arising from, resulting from, or connected with services, performed or to be performed under this Contract by Contractor, its agents or employees, even though such claims may prove to be false, groundless or fraudulent, to the fullest extent permitted by law and subject to the limitations provided below.

2) Contractor's duty to indemnify Owner shall not apply to liability for damages arising out of bodily injury to persons or damage to property caused by or resulting from the sole negligence of Owner or its agents or employees. Contractor's duty to indemnify Owner for liability for damages arising out of bodily injury to persons or damage to property caused by or resulting from the concurrent negligence of (a) Owner or its agents or employees, and (b) Contractor or its agents or employees shall apply only to the extent of negligence of Contractor or its agents or employees.

3) Contractor's duty to indemnify Owner for liabilities or losses other than for bodily injury to persons or damage to property shall apply only to the extent of the fault of Contractor or its agents, employees, subcontractors or suppliers of any tier, except in situations where fault is not a requirement for liability, in which case indemnity will be provided to the extent the liability or loss was caused by Contractor or its agents, employees, subcontractors or suppliers of any tier. Entitlement to recovery of defense costs shall include all fees (of

attorneys and others), costs and expenses incurred in good faith. In addition, Owner shall be entitled to recover compensation for all its in-house expenses (including materials and labor) consumed in its defense.

4) Contractor specifically and expressly waives any immunity that may be granted it under the Washington State Industrial Insurance Act, Title 51 RCW. Further, the indemnification obligation under this Contract shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable to or for any third party under workers' compensation acts, disability benefits acts, or other employee benefits acts; provided Contractor's waiver of immunity by the provisions of this paragraph extends only to claims against Contractor by Owner, and does not include, or extend to, any claims by Contractor's employees directly against Contractor.

APPENDIX D

INSURANCE REQUIREMENTS

Type of Insurance	**Amount**
Workers compensation	Statutory
Employers Liability (WA stop gap)	1,000,000 Each Accident
	1,000,000 Disease Policy Limit
	1,000,000 Disease Each Employee
Commercial General Liability	2,000,000 General Aggregate
	2,000,000 Products & Completed Operations Aggregate
	1,000,000 Personal Injury
	1,000,000 Each Occurrence
Automobile liability – Combined Single Limit	1,000,000 Each Accident

APPENDIX E

ELECTRON HYDRO – FISHERIES COMPLIANCE CHECKLIST FOR INTAKE SHORELINE CONSTRUCTION 2018 – 2020

1-Intake Project Permit Summary

- Electron Hydro Diversion Repair, Spillway Replacement and Bank Protection (HPA #14829)
- 1-Electron Hydro JARPA_Sup_28Mar2017 Plans Reduced PDF
- Coffer Dam Left Bank Upstream Repair
- Pierce County Shoreline Substantial Development Permit (#858766, #858765)
- Washington Dept. of Ecology Construction Stormwater General Permit (#WAR306648)
- Army Corps of Engineers Nationwide Permit (3)(13) (NWS-2016-350)
- NMFS Biological Opinion (WCR-2016-4993)
- USFWS Biological Opinion (01EWFW00-2017-F-0890)

The selected contractor shall be given copies of each required permit to be kept on site during construction and shall be responsible for meeting all requirements. The attached permit checklist summarizes the specific requirements of the various permits.

Contact Kim Moore at 360.761.1599 office or 425.530.6936 cell should the contractor want copies of the complete documents.

Electron Hydro- Fisheries Compliance Checklist for Intake Shoreline Construction 2018-2019-2020

Timing Limitation

- ☐ Work below the OHWM must only occur between July 15 and Sept 15. (HPA #14829)

Fish

- ☐ Check for presence of fish.
- ☐ Fish spawning is not occurring in the areas where work will occur, or within 100 feet upstream or downstream (HPA #2250)
- ☐ All persons participating in capture and removal must have training, knowledge, and skills in the safe handling of fish life. (HPA #14829)
- ☐ Capture and safely move fish life from the work area to the nearest suitable free-flowing water (below diversion). (HPA #14829, 8269)

- ☐ All persons removing fish life from a job site must follow the protocol described in Appendix A of the Biological Evaluation entitled, "Phase I Fish Exclusion and Removal Protocols" (attached). (HPA #14829)
- ☐ A diversion structure must not hinder upstream and downstream adult and juvenile fish passage. (HPA #14829)
- ☐ To prevent fish from stranding, backfill trenches, depressions, and holes in the bed that may entrain fish during highwater or wave action. (HPA #14829, 2250)

Water Quality

- ☐ Maintain water quality when installing and removing cofferdam. (HPA #14829, 8269)
- ☐ Install the cofferdam and remove fish prior to the start of other work in the wetted perimeter. (HPA #14829)
- ☐ Do not stockpile construction materials waterward of the ordinary high-water line, except for excavated riverbed material. (HPA #14829)
- ☐ Do not release overburden material into the water of the state when resloping the bank. (HPA #14829)
- ☐ Place bank protection material and biodegradable filter blanket material from the bank. (HPA #14829)
- ☐ Complete all bank protection work prior to releasing the water flow to the project area. (HPA #14829)
- ☐ Gravel shall not be pushed across the channel. (HPA #2250)
- ☐ Large woody material repositioning shall be accomplished in a manner which minimizes the release of bedload, logs, or debris downstream and shall avoid spawning areas. (HPA #2250)
- ☐ All erosion control materials that will remain onsite must be composed of 100% biodegradable materials. (HPA #8269)
- ☐ Straw used for erosion and sediment control, must be certified free of noxious weeds and their seeds. (HPA# 8269)

Equipment

- ☐ Invasive Species Control: Follow Level 1 Decontamination protocol for low risk locations. Thoroughly remove visible dirt and organic debris from all equipment and gear (including drive mechanisms, wheels, tires, tracks, buckets and undercarriage) before arriving and leaving the jobs site to prevent the transport and introduction of invasive species. Properly dispose of any water and chemicals used to clean gear and equipment. (HPA #14829, 6202, 8269)
- ☐ Check equipment daily for leaks and complete any required repairs in an upland location before using the equipment in or near the water. (HPA #14829, 8269)
- ☐ Use environmentally acceptable lubricants composed of biodegradable base oils such as vegetable oils, synthetic esters, and polyalkylene glycols in equipment operated in or near the water (Ecoterra 32). (HPA #14829, 8269)

Notification Requirements

- ☐ WDFW must receive notification 3 days prior to starting in-water work, and again within seven days after completing the in-water work each year of construction. (HPA #14829)
- ☐ The Tribe biologist shall be allowed to view/participate in all fish handling and transportation with 72 hours prior notice. (Shoreline Substantial Development Permit)
- ☐ If a fish kill occurs or fish are observed in distress at the job site, immediately stop all activities causing harm and notify WDFW. (HPA #14829, 2250, 8269)

Other Requirements

- ☐ Limit the removal of native bank line vegetation to the minimum amount needed to construct project. (HPA #14829, 8269)
- ☐ Retain all natural habitat features on the bed or banks including large woody material and boulders. You may move these natural features during construction, but you must place them near the pre-project location before leaving the job site. (HPA #14829, 2250)
- ☐ Do not use wood treated with oil-type preservatives. (HPA #14829)
- ☐ Place boundary markers to identify the excavation zone. (HPA #14829, 8269)
- ☐ Upon completion of the project, remove all materials or equipment from the site and dispose of all excess spoils and waste materials in an upland area above the limits of anticipated floodwater. (HPA #14829)
- ☐ Gravel shall remain in the river channel either immediately upstream of the Electron Dam, or as far downstream as River Mile 40. Gravel may be stored landward of OHWM outside the work window but by September 15 of each year, all river sediment must be returned to the river either in the active channel or on an existing gravel bar, but not in a way that visibly increases turbidity. (HPA #2250)
- ☐ Should archeological materials or human remains be observed, work shall stop and the State Department of Archelogy and Historic Preservation, County Planning Department, affected Tribes and County Coroner shall be contacted immediately. (Shoreline Substantial Development Permit)

APPENDIX F

BID PROPOSAL

SIGNATURE PAGE

ELECTRON HYDRO, LLC

CONSTRUCT DIVERSION REPAIR, SPILLWAY REPLACEMENT AND BANK PROTECTION (PHASE 1C)

All submittals must be in ink or typewritten and must be executed by a duly authorized officer or representative of the bidding/proposing entity. If the bidder/proposer is a subsidiary or doing business on behalf of another entity, so state, and provide the firm name under which business is hereby transacted.

Submittals will be received only at 19318 Electron Road East, located at Orting, WA 98360.

REQUEST FOR PROPOSAL SPECIFICATION

ELECTRON HYDRO, LLC

The undersigned bidder/proposer hereby agrees to execute the proposed contract and furnish all materials, labor, tools, equipment and all other facilities and services in accordance with these specifications.

_____
Bidder/Proposer's Registered Name

_____
Address

_____
City, State, Zip

_____
E-Mail Address

_____

E.I.N. / Federal Social Security Number Used on Quarterly Federal Tax Return, U.S. Treasury Dept. Form 941

_____
Signature of Person Authorized to Enter into Contracts for Bidder/Proposer — Date

_____
Printed Name and Title

_____
(Area Code) Telephone Number / Fax Number

_____

State Business License Number

In WA, also known as UBI (Unified Business Identifier) Number

State Contractor's License Number (if applicable)

(See Ch. 18.27, R.C.W.)

Addendum acknowledgement: #1_____ #2_____ #3_____ #4_____

THIS PAGE MUST BE SIGNED AND RETURNED WITH SUBMITTAL

_____

Name of Bidder

PROPOSAL

	QUANTITY	BID UNIT	UNIT COST	TOTAL COST
ITEM 1				
Provide Constructability and Cost Savings Consultation Prior to Notice to Proceed for (Phase 1C)			_____	_____
ITEM 1A				
Project Manager	24	On Site Hours	_____	_____
ITEM 1B				
Project Manager	80	Off Site Hours	_____	_____
ITEM 1C				
Site Superintendent	24	On Site Hours	_____	_____
ITEM 1D				
Site Superintendent	40	Off Site Hours	_____	_____
ITEM 2				
Construct Diversion Repair, Spillway Replacement and Bank Replacement (Phase 1C)		LS		$_____
TOTAL ITEMS 1 - 2				$_____
****Sales Tax @ 9.3%**				$_____
TOTAL AMOUNT				$_____

NOTE: Once a Contractor has been selected for this contract only Item 1 will initially be awarded. After a complete construction set of drawings has been prepared with input by the Contractor, final costs have been negotiated and scope of work for both parties has been clearly delineated a Notice to Proceed and Contract for construction of all work in Phase 1C (Bid Item 2) will be awarded.

APPENDIX G –

Construction Specifications

Construct Diversion Repair, Spillway Replacement and Bank Protection (Phase 1C)

TABLE OF CONTENTS

DIVISION 1 - SPECIAL PROVISIONS

SECTION 01010 - SUMMARY OF WORK

1.1 PROJECT DESCRIPTION

This project includes work as described in this request for proposal and as detailed in Appendix H.

In all cases, the contract is with one (1) general contractor and it is the general contractor's responsibility to ensure all work required to provide a complete and operational facility is included in their bid. When possible, the Owner has attempted to reference work which should be coordinated with various trades, but it is the contractor's responsibility to coordinate and schedule the work of all subcontractors, trades, and suppliers to assure the proper and timely prosecution and completion of all items of work.

1.2 PROJECT LOCATION

This project is located at the Electron Hydro Project intake on the Puyallup River approximately 10 miles upstream of the Electron Project Office/Powerhouse located at 19318 Electron Road E. in Orting, Washington, and as shown on drawings included Appendix H. The project is located in Pierce County, Washington. The intake is approximately a 30 minute drive from the project office via logging roads.

1.3 SITE SHOWING

The bidder will be responsible for examining the site(s) and to have compared the sites with the specifications and contract drawings contained in this specification, and be satisfied as to the facilities and difficulties attending the execution of the proposed contract (such as uncertainty of weather, floods, nature and condition of materials to be handled and all other conditions, special work conditions including work schedules, obstacles and contingencies) before the delivery of their proposal.

The contractor shall carefully study and compare the contract documents with each other and shall at once report to the Owner errors, inconsistencies or omissions discovered. If the contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission in the contract documents without such notice to the Owner, the contractor shall assume the risk and responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

1.4 COMMENCEMENT, PROSECUTION AND COMPLETION

The contractor will be required to complete the contract documents upon completion of Bid Item 1. The contractor shall begin the work to be performed in the contract as agreed upon during meetings paid for under Bid Item 1. Notification to commence work may either be by letter or, if no letter is issued, by agreement at the preconstruction conference (or if no letter is issued, by the date the contract is executed by the Owner).

The contractor shall be required to complete all in water work between July 15 and September 15, 2020. Actual construction days will be as agreed to during meetings related to Bid Item 1.

1.5 SPECIFICATION FORMAT

This specification is written and formatted for use with Public Works specifications and is numbered to be consistent with other specifications, including Construction Specifications Institute (CSI) format, as modified by the Owner. It is not intended to indicate what work is to be accomplished by various subcontractors on the project. In all cases, this contract is with one (1) general contractor and it is the general contractor's responsibility to ensure all work required to provide a complete and operational facility is included in their bid. The specifications will be reviewed as part of work detailed in Bid Item 1 and any changes will be agreed upon by contractor and Owner. Final pricing for Bid Item 2 will be based on changes to drawings and specifications agreed upon during final design procedures.

1.6 CONTRACT WORK TIMES

The contractor shall submit a weekly proposed work plan showing required inspections for Monday through Sunday of the following week. This work plan shall be given to the Owner for approval as agreed upon time weekly mutually which is when the coordination meeting as described in Section 01040 – Project Coordination will be held.

Work not specifically detailed on the weekly work plan as requiring inspection shall not be performed unless approved by the engineer/owner.

1.7 QUALIFICATION OF CONTRACTORS

A. QUALIFIED CONTRACTORS

Only contractors with management, employees, and staff experienced in the type of work required by this specification, and with a record of successful completion of projects of similar scope, complexity, and overall cost will be considered. The Owner will be the sole judge of the bidder's ability to meet the requirements of this paragraph. Bidders past work will be judged in complexity of job, time of completion, organization, and other factors that may indicate the abilities of the contractor.

Submit to the engineer within ten (10) calendar days following execution of the Notice to Proceed for Bid Item 2., a list of all subcontractors, including each subcontractor's address, telephone number, and contact person to be used on this project

1.8 SPECIFICATIONS AND DRAWINGS

The following drawings, attached to this proposal, are made a part of the contract:

Appendix G – Construction Specifications

Appendix H – Bid Set Construction Drawings

1.9 WORK BY OWNER

The Owner will award separate work related to this overall project.

Items noted **'NIC'** (not in contract) on the drawings will be furnished by the Owner for installation by the Contractor during or concurrently with the work of this contract, and are not included in this contract:

A. Owner supplied 12' high x 70' wide air bladder spillway and embedded steel conduits and cabling to be furnished and installed by Contractor.

B. Owner supplied trash rack cleaning system power and control cabling to be furnished and installed by Contractor.

END OF SECTION

SECTION 01025 - MEASUREMENT AND PAYMENT

1.1 ADMINISTRATION

A. AUTHORITY

The Owner inspector or engineer in coordination with the contractor shall make all measurements and determine all quantities and amounts of work done for progress payments under the contract.

Approximately once a month or as agreed upon, the Owner shall make an estimate of the work completed or done by the contractor, and such estimates will be made by measurement or approximation at the option of the Owner. The engineer's determination of progress payments shall be conclusive. The Owner will not pay for material not under Owner's control. As part of this proposal, contractor should indicate their reasonable preferred payment terms.

In case work is suspended, nearly suspended, or in case only unimportant progress is being made, the owner may, at their discretion, make progress estimates at longer intervals than once a month.

Invoices shall be mailed to the attention of:

Doris Hyland
Electron Hydro, LLC
19318 Electron Road East
Orting, WA 98360

and copied to Kim Moore.

B. CONTRACT PRICE

The lump sum and unit bid prices shall be full and complete compensation for the contract work stated, together with all appurtenances incidental thereto, including materials, equipment, tools, labor, and all the costs to the contractor for completing the contract in accordance with the plans, specifications, and instructions of the engineer.

All work not specifically described or mentioned in these specifications, but that are required to be constructed to achieve complete and operable systems, structures or amenities shall be considered incidental items of work, not separately compensable, and its price included in items of work specified in the specifications.

C. NON-PAYMENT FOR REJECTED OR SURPLUS PRODUCTS

Payment will not be made for any of the following:

1. Products wasted or disposed of in a manner that is not acceptable
2. Products determined as unacceptable before or after placement
3. Products not completely unloaded from the transporting vehicle
4. Products placed beyond the lines and levels of the required work
5. Products remaining on hand after completion of the work
6. Loading, hauling and disposing of rejected products

.

1.2 FORCE ACCOUNT WORK

In certain circumstances, the contractor may be required to perform additional work. Where the work to be performed is determined to be extra and not attributed to the contractor's negligence, carelessness, or failure to install permanent controls, it shall be paid in accordance with the unit contract price or by force account.

Such additional work not covered by contract items will be paid for on a force account basis in accordance with Section 1-09.6 of the Standard Specifications or as a negotiated change order with lump sum or unit price items. There is no guarantee that there will be any force account work.

1.3 NON-PAYMENT FOR REJECTED OR SURPLUS PRODUCTS OR WORK

Payment will not be made for work rejected by the Owner. Products or work not meeting contract requirements shall be replaced by the contractor at no expense to the Owner, regardless of the impact to work, schedule or cost.

1.4 AS-BUILTS

The final payment of this contract will not be released until complete "AS-BUILT" plans are received and approved by the engineer.

END OF SECTION

SECTION 01040 - PROJECT COORDINATION

1.1 PROJECT ENGINEER/LEAD

The project engineer/lead shall be herein referenced as engineer in these specifications.

Construction management for this project with whom the contractor shall coordinate all their activities will be Mr. Kim Moore at (360) 761-1599 once the notice to commence work is issued. Any changes to these specifications or plans shall be approved by this engineer prior to commencing any work.

Bidder inquiries, regarding technical specifications, may be directed to Kim Moore.

1.2 MEETINGS

A. PRE-CONSTRUCTION MEETING

Following award of the contract for Bid Item 2, the engineer will notify the selected bidder of the time and date of the pre-construction meeting to be held at the project location.

Minutes of the pre-construction meeting will be sent to the contractor and all meeting attendees. Recipients of the pre-construction meeting minutes will be required to direct any comments or changes to these minutes to the engineer within seven (7) days from the date of receipt. If no changes or comments are received within the seven (7) days, the meeting minutes will be kept by the engineer and become part of the project file.

NOTE: Much of this work will be discussed and agreed upon during meetings paid for under Bid Item 1.

B. SITE MEETINGS

The engineer will schedule weekly meetings at the project site prior to each major phase or section of work; prior to installing major pieces of equipment as identified by the engineer; and on an as-needed basis. Attendance is required of the contractor, site superintendent and major subcontractors at all such meetings. The engineer will notify the contractor of all required site meetings during the pre-construction meeting. Agenda will follow the same format as the pre-construction conference for applicable items.

Minutes of the weekly site meeting will be sent to the contractor and all meeting attendees. Recipients of the pre-construction meeting minutes will be required to direct any comments or changes to these minutes to the engineer within seven (7) days from the date of receipt. If no changes or comments are received within the seven (7) days, the meeting minutes will be kept by the engineer and become part of the project file.

C. COORDINATION MEETING WITH OTHER CONTRACTORS

While this project is underway there will be other major vendors supplying both the trash rack cleaning system and air bladder.

Work on these projects may require:

1. Mobilizing and using cranes or existing on site equipment
2. Loading and unloading of materials for these projects
3. Disruptions to the work areas adjacent to this project and other activities which must be coordinated among the Owner and all affected contractors.

As such, there may be coordination meetings required throughout the project depending on the other contracts and at the discretion of the owner.

These meetings will be attended by the contractor and/or superintendent and the owner's project managers.

1.3 FIELD ENGINEERING

A. SURVEY REFERENCE POINTS ESTABLISHED BY OWNER

The Owner has established a suitable number of benchmarks adjacent to the work. Contractor's work shall conform to the established controls unless deviations are obtained from the engineer.

The contractor shall protect survey control points prior to starting site work and preserve permanent reference points during construction.

Promptly report to the engineer the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

Survey control damaged by the contractor shall be replaced by owner and paid for by the contractor.

B. TO BE ESTABLISHED AND MAINTAINED BY CONTRACTOR

Based upon the information provided by the engineer, all other lines, grades, and detail surveys necessary for the execution and completion of the work, including slope stakes, batter boards, and other working points, lines and elevations, shall be established and maintained by the contractor.

After lines and grades for any part of the work have been given by the engineer, the contractor shall be held responsible for the proper execution of the work to such lines and grades, and all bench marks, reference points and stakes given shall be carefully preserved by the contractor until authorized by the engineer to remove them. The contractor shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such benchmarks, reference points and stakes.

The contractor shall be financially responsible for additional stakeout performed by the engineer as required to replace survey reference points destroyed during construction.

The engineer reserves the right to check all work, have free access to all work, and shall have the full cooperation of the contractor in so doing.

1.4 DIVISION OF WORK

A. MATERIAL FURNISHED AND INSTALLED BY CONTRACTOR

The contractor shall furnish and pay for all necessary materials (except Owner-furnished) and shall provide all labor, tools, equipment and superintendent, and perform all work incidental to the completion of the project as contemplated by this contract in accordance with the plans, specifications, and instructions of the engineer.

Each subcontractor shall furnish and install all materials and equipment unless otherwise specified.

B. OWNER-FURNISHED MATERIAL INSTALLED BY CONTRACTOR

All material received by the contractor shall become their responsibility and the contractor shall be liable for any materials lost or damaged after receipt.

The Owner will provide:

1. Trash Rack Cleaning System

2. 12' high by 70' wide air bladder spillway

C. WORK TO BE DONE BY OWNER

The Owner will provide all materials and perform all work to:

1. (To be determined in discussion with selected contractor as part of Bid Item 1.)

1.5 CONTRACT CHANGES

The Owner has developed four (4) forms to facilitate and track communications with the contractor. These are the **Request for Information (RFI), Engineering Change Directive (ECD), Proposal Request (PR),** and **Change Order Proposal (COP)**. These forms are included at the end of the Special Provisions.

The **Request for Information (RFI)** shall be used by the contractor whenever written direction on conflicts in plans, insufficient or unconstructable detail is shown, or any other issue which should be documented arises. The Owner may also use the form to inquire on contractor's methods, schedule or other issues not warranting more formal letter correspondence. The contractor shall maintain the numbering system and, as such, any issued by the Owner will be unnumbered until delivered to the contractor.

The **Engineering Change Directive (ECD)** shall be used by the Owner to transmit new or revised drawings, issue additions or modifications to the contract or furnish any other direction which should be documented. Directives are effective immediately. Should the contractor believe that such Directive should result in either a change in cost or time for the project, they shall notify the engineer prior to commencing such work and, if possible, submit a **Change Order Proposal** prior to the start of such work, but in no case, more than seven (7) days from receipt of said Directive.

In the event the Owner does not receive a **Change Order Proposal** from the contractor within seven (7) calendar days of the contractor's receipt of a Directive from the Owner, the contractor shall have no claim for extra cost or time or impacts attributable to the work required by the Directive. (Directives are numbered by the Owner.) Once the Owner and the contractor have established a price for the changes required by the Directive or any other request by the Owner for a change in the work, and a **Change Order Proposal** issues reflecting the agreed upon price, it is agreed and understood that the price reflected by the **Change Order Proposal** shall include all direct costs, indirect costs, and the contractor's estimate of impacts to its work, including but not limited to delay impacts, and shall represent a full and final settlement of all issues pertaining to the work required by the Directive, and work performed by the contractor up to the date of the **Change Order Proposal**.

The **Proposal Request (PR)** shall be used by the Owner to request pricing on a possible change in plans or additional work. The PR may also be used to request credits for deletion or changes in scope of work. The contractor shall respond to such requests with a **Change Order Proposal** within seven (7) days from receipt of said Request unless more time has been agreed to. Requests are numbered by the Owner.

The **Change Order Proposal (COP)** shall be used by the contractor to respond to Owner issued Proposal Requests, Engineering Change Directives or when the contractor believes that changed conditions or omitted, but necessary, work items exist. The COP may be used for requested changes in cost or time of the contract. COPs shall be numbered by the contractor, and, in the case of revision or resubmission of the same basic COP, the number shall be hyphenated with the letter "B", "C", etc.

1.6 DIFFERING SITE CONDITION

Contractor shall have no claim for additional costs or work, if they fail to submit a written RFI to the Owner immediately upon encountering any differing site condition, conflicts in the plans, specifications, or constructability issues.

The contractor shall promptly, and before conditions are disturbed, notify the engineer or their field representative of problems with subsurface conditions at the site, problems or conflicts in the plans or specifications or problems on constructability. A written **Request for Information (RFI)** shall be submitted by the contractor when such problems and direction are required.

The engineer shall promptly investigate the conditions, and if agreed upon with the contractor, adjustment shall be made on the appropriate details in writing to facilitate construction. The response may be on the **RFI** or may necessitate an **Engineering Change Directive (ECD)** or **Proposal Request (PR).** No claim by the contractor under this differing site condition shall be allowed except as agreed upon in writing with the engineer.

Whenever possible, should the Owner desire extra work to be performed a **Proposal Request (PR)** shall be sent to the contractor**.**

Whenever possible, the contractor shall submit in advance and in writing, a **Change Order Proposal (COP)** for changes in the scope of work and/or contract amount. This proposal shall be either accepted or rejected in writing by the project engineer prior to work commencing. When no agreement can be reached, the Owner may order extra work on force account.

When time is short, the contractor shall notify the Owner extra work is required or the Owner shall notify the contractor that extra work is needed and at a minimum, the engineer shall issue a handwritten **Engineering Change Directive**. In such cases, said handwritten **Directive** will not be considered as agreement that such work is extra. Within seven (7) days, the contractor shall submit a written **Change Order Proposal** for changes in the scope of work and/or contract amount.

1.7 CONSTRUCTION PROGRESS SCHEDULES

A. FORMAT

The contractor shall prepare schedules as a horizontal bar chart with separate bar for each major portion of work or operation, identifying the first workday of each week and include holidays and times when facility will not be available to contractor for Owner installed work.

B. CONTENT

This schedule shall be activity-oriented showing as nearly as can be determined the starting and completion dates of each event. The schedule shall show the materials delivery, concrete pours, and equipment installation. It will include the start and completion of each major civil, structural, mechanical, communications and electrical item of work critical to the general contractor's operation.

Show complete sequence of construction, by activity, with dates for beginning and completion of each element of construction.

Identify each task by the appropriate proposal bid item number and subcontractor responsible.

C. SEQUENCE SCHEDULING

It shall be the contractor's responsibility to properly phase in all work specified herein including all work done by subcontractors.

Progress schedules are required to be coordinated with Owner and updated monthly or when changes occur. Acceptance or approval of the progress schedule does not release the contractor from the responsibility to provide the necessary resources to meet the schedule.

D. SUBMITTALS

The contractor shall submit initial schedules at the preconstruction meeting or at a minimum of within ten (10) working days after the contract award. After review, if changes are required by the engineer, resubmit required revised data within ten (10) working days.

The contractor shall use the attached Submittal Transmittal form (electronic version is available from the engineer) for all submittals.

Within twenty (20) days of the date of the contract, the contractor and the engineer will reach an agreement on any and all adjustments and all modifications to the submitted schedule which are warranted. The schedule, thus modified, will become part of the contract.

The failure of the contractor to submit a schedule(s), or the inability of the contractor and the Owner to reach an agreement as to modifications to a schedule, shall not excuse the contractor's obligation to perform the work required by the specifications in the number of days required by the specification.

Once a month, the Owner's and the contractor's site representatives will meet and perform a "Line-to-Line" review of items on the schedule, illustrating their plan for meeting the completion dates specified in this contract and the associated construction costs for each subcontractor.

1.8 PROTECTION OF EXISTING UTILITIES AND IMPROVEMENTS

In addition to Section 3.03 "Notification of Other Governmental Agencies and Utilities When Underground Work is Involved" and Section 3.07 "Protection of Workers and Property" of the General Provisions:

The contractor shall protect from damage the utilities and all other existing improvements not provided for in the proposal or special provisions. The cost of labor, equipment and materials required to protect or replace said items shall be incorporated into the bid for this project.

The Owner has attempted to locate and show on the contract drawings the locations of the existing underground utilities which may conflict with portions of this work but cannot guarantee the accuracy or the completeness of the data shown.

The contractor will schedule the work to accommodate this requirement.

1.9 SUPERINTENDENT

The contractor shall employ a competent superintendent (foreman) who shall be present at the project site at all times during the entire progress of the work, except those times when the contractor is demobilized. The superintendent shall be on site even when only a subcontractor is working, unless otherwise approved by the engineer. The foreman shall be satisfactory to the contractor and shall have full authority to act on their behalf.

It will be the foreman's responsibility to have a set of plans and specifications on the project site during the progress of the work. The foreman shall mark or record on the plans all changes made during construction. Such redline "AS-BUILT" plans shall be available to the engineer at all times and shall be delivered to the engineer upon completion of the work.

The superintendent initially assigned to the project by the general contractor shall remain superintendent for the duration of the contract. If the superintendent is replaced, all work shall stop until an additional preconstruction meeting with the Owner is held. This work stoppage will be at the contractor's expense. The completion date shall remain unchanged, regardless of any work stoppage.

NOTE: The final retained portion of this contract shall not be released for any reasons until complete redline "AS-BUILT" plans are received and approved by the engineer. Redline "AS-BUILT" plans shall have all necessary information including make/model numbers, dimensions, and layout information necessary to properly draft changes in AutoCAD.

1.10 CLEAN UP

A. DAILY

The contractor and the Owner's inspector will walk the site daily and as required to determine the cleanup and restoration required.

All areas shall be left safe, clean and free of debris.

Surplus excavation, conduit material, tools, temporary structures, dirt and rubbish shall be removed and disposed of by the contractor, and the construction site shall be left clean to the satisfaction of the engineer.

Clean up is considered incidental to the project and no payment will be allowed.

Collect waste daily and when containers are full, legally dispose of waste off site.

Clean-up of any area impacted by the construction shall be done weekly or as directed/instructed by the engineer.

END OF SECTION

CHANGE ORDER PROPOSAL (COP)

(This form shall be used by the contractor to respond to Owner issued Proposal Requests, Engineering Change Directive or when the contractor believes that changed conditions or omitted, but necessary, work items exist. The COP may be used for requested changes in cost or time of the contract.)

COP No.: _____ *(Contractor Assigns)*

REF. Doc.: _____ *(Initiating an RFI, ECD or PR)*

Date: _____

Project Title: _____

Specification No.: _____ Contract No.: _____

Contractor:

Owner:
Electron Hydro LLC
19318 Electron Road East
Orting, WA 98360

Title: _____

☐ Architectural ☐ Civil ☐ Structural ☐ Mechanical ☐ Electrical ☐ Other

Scope of Change:

Initiated By: _____ Representing: _____
(Name) *(Company)*

Cost/Credit: _____ Time Extension Request: _____

Attachment Type: _____
(Supporting Documentation)

This change order proposal shall include ALL labor, material, equipment, subcontractor costs, mark-ups including overhead, profit, any other direct and/or indirect costs, and any requests for additional time associated with the change in the scope of work.

Electron Hydro's Response:

Action: ☐ Approved ☐ Unapproved ☐ Revise and Resubmit *(Select only one)*

*Prior to any extra work the contractor shall submit a written **Change Order Proposal** (COP). See Section 01040, Contract Changes, of the specification for this Contract.*

Response By: _____ Attachment Type: _____
(Name) *(Supporting Documentation)*

Representing: _____ Response Date: _____
(Company) *(Date)*

Cc:

ENGINEERING CHANGE DIRECTIVE (ECD)

(This form shall be used by the owner to transmit new or revised drawings, issue additions or modifications to the contract or furnish any other direction which should be documented.)

ECD No.: _____ *(ELECTRON Assigns)*

Date: _____

Project Title: _____

Specification No.: _____ Contract No.: _____

Contractor:

Owner:
Electron Hydro LLC
19318 Electron Road East
Orting, WA 98360

Title: _____

☐ Architectural ☐ Civil ☐ Structural ☐ Mechanical ☐ Electrical ☐ Other

You are hereby directed to make the following modification(s) in the Scope of Work in this Contract:

This document becomes effective upon receipt by the Contractor, with signature of an approved Owner representative. The Contractor shall then commence with modifications(s) listed above.

Attachment Type: _____ *(Supporting Documentation)*

Initiated By: _____ *(Name)*

Representing: _____ *(Company)*

Contractor's Response:

This ECD: ☐ Will Not ☐ May ☐ Will *(select one box only) result in a claim by the Contractor.*

Prior to any extra work the contractor shall submit a written ***Change Order Proposal*** *(COP). See Section 01040, Contract Changes, of the specification for this Contract.*

Attachment Type: _____ *(Supporting Documentation)*

Response By: _____ *(Name)*

Response Date: _____ *(Date)*

Representing: _____ *(Company)*

Cc:

REQUEST FOR INFORMATION (RFI)

(This form shall be used by the contractor whenever written direction on conflicts in plans, insufficient or unconstructable detail is shown, or any other issue which should be documented arises; or by the City when additional clarification is required.)

RFI No.: _____ *(Contractor Assigns)*

Date: _____

Project Title: _____

Specification No.: _____ Contract No.: _____

Contractor:

Owner:
Electron Hydro LLC
19318 Electron Road East
Orting, WA 98360

Subject: _____

☐ Architectural ☐ Civil ☐ Structural ☐ Mechanical ☐ Electrical ☐ Other

Requested Information:

Attachment Type: _____ *(Supporting Documentation)*

Initiated By: _____ *(Name)*

Response Required: _____ *(Date)*

Representing: _____ *(Company)*

Response:

Attachment Type: _____ *(Supporting Documentation)*

Response By: _____ *(Name)*

Representing: _____ *(Company)*

Response Date: _____ *(Date)*

*Prior to any extra work the contractor shall submit a written **Change Order Proposal** (COP). See Section 01040, Contract Changes, of the specification for this Contract.*

REQUEST FOR INFORMATION (RFI)

(This form shall be used by the contractor whenever written direction on conflicts in plans, insufficient or unconstructable detail is shown, or any other issue which should be documented arises; or by the City when additional clarification is required.)

Electron Hydro's Approval:
The owner (Electron Hydro, LLC) reviewed the foregoing request and finds the response to be in order. Project Engineer: _____ Response Date: _____ *(Name)* *(Date)*

Cc:

PROPOSAL REQUEST (PR)

(This form shall be used by the Owner to request pricing on a possible change in plans or additional work. The PR may also be used to request credits for deletion or changes in scope of work.)

PR No.: ☐ *(Electron Hydro Assigns)*

Date: _____

Project Title: _____

Specification No.: _____ Contract No.: _____

Contractor:

Owner:
Electron Hydro, LLC
19318 Electron Road East
Orting, WA 98390

Subject: _____

☐ Architectural ☐ Civil ☐ Structural ☐ Mechanical ☐ Electrical ☐ Other

Scope of Request:

Attachment Type: _____
(Supporting Documentation)

This is not a change order or a notice to proceed with the described work. *Prior to any extra work the contractor shall submit a written* ***Change Order Proposal*** *(COP). See Section 01040, Contract Changes, of the specification for this Contract.*

Initiated By: _____ Representing: _____
(Name) *(Company)*

Cc:

CONTRACTOR SUBMITTAL TRANSMITTAL

Submittal No.: ☐ *(Contractor Assigns)*

Date: _____

Project Title: _____

Specification No.: _____ Contract No.: _____

Contractor:

Owner:
Electron Hydro, LLC
19318 Electron Road East
Orting, WA 98360

Subject: _____

☐ Architectural ☐ Civil ☐ Structural ☐ Mechanical ☐ Electrical ☐ Other

Sending the Following Item(s):

☐ Submittals ☐ Product/Data ☐ Samples ☐ Plans ☐ Shop Drawings ☐ Copies
☐ Specifications ☐ Contract ☐ Other: _____

Copies	Section	Description of Product/Data	Manufacturer

Transmitted as:

☐ For Approval ☐ For Your Use ☐ Per Your Request ☐ For Review and Comment
☐ Other: _____

Remarks:

For Use by Architect/Engineer:

☐ No Exception Taken ☐ Make Corrections Noted ☐ Revise and Resubmit ☐ Rejected (See Response)

Corrections or comments made on the shop drawings during this review do not relieve Contractor from compliance with the requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating his work with that of all other contractors and agencies performing his work in a safe and satisfactory manner.

Response Date: _____ Response By: _____
(Date) *(Name*

SECTION 01300 – SUBMITTALS AND SHOP DRAWINGS

1.1 SUBMITTALS AND SHOP DRAWINGS DURING CONSTRUCTION

Submittals and shop drawings submitted to the Owner as specified herein are intended to show compliance with the contract documents. Signatures, corrections or comments made on submittals do not relieve the contractor from compliance with requirements of the drawings and specifications. Neither does acceptance or approval of submittals by signature add to or delete from any contract requirements resulting from these specifications regardless of the wording of the submittals. Submittals will not be reviewed or approved when the term "By Others" is used. Submittals are reviewed or approved for general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processed and techniques of construction, coordinating their work with that of other contractors and agencies, and performing their work in a safe and satisfactory manner. Piece meal submittals will not be accepted.

During meeting as part of Bid Item 1, it will be agreed as to what submittals are required.

A. SCHEDULE OF SUBMITTALS

1. Within ten (10) days of notice to proceed, prepare schedule of submittals for shop drawings, product data, samples, and as specified for each section. Update as requested by engineer.
2. Show submittal preparation time, field measurements and verification time, date submitted to engineer, date due back from engineer, item order dates, and delivery dates.
3. Identify individual delivery, long lead times, and critical ordering deadlines. Include ordering dates for each item including individual parts of major submittals.
4. Indicate specified time allocated for review, turn around and distribution.
5. Identify decision dates for selection of colors and finishes not scheduled or otherwise approved.

C. SHOP DRAWINGS

1. Number and Format: Electron drawing in accordance with Owner's request.
2. Submittal Procedure: Submit for engineer's review in accordance with submittal procedures specified in this section. After approved drawings are return, the contractor shall reproduce and distribute copies to subcontractors and other entities, as applicable. Maintain one (1) copy of each shop drawing at field office and one (1) for project record documents to be delivered to the engineer at project completion.
3. Maximum Sheet Size: 24-inches by 36-inches or other allowable sizes of 8-1/2-inches by 11-inches or 11-inches by 17-inches.
4. Identification: Reference shop drawing details same as reference on contract documents, including sheet and detail descriptions, schedules and room numbers. Indicate by whom materials, products, work, and installations are supplied, performed or installed. Do not use the expression "by others".
5. Presentation: Hand drafted or computer generated, delineated to present information in a clear and thorough manner. Freehand drawings not approved. CAD drawings.

6. Variations from Contract Documents due to Standard Shop Practices: Make transmittal outlining variation.
7. Engineer Changes to Submittals which affect Contract Sum or Contract Time: Do not distribute to being work related to submittal. Notify engineer immediately.
8. Mechanical and Electrical Utilities, Equipment and Appliance: Include electrical characteristics, connection requirements, rough-ins, location of outlets, wiring, piping diagrams, weight where significant, and as required to describe installation requirements.

D. PRODUCT DATA

1. Number of Copies: Submit two (2) copies to be retained by the engineer.
2. Submittal Procedures: Submit for engineer review in accordance with submittal procedures specified in this section. After review, distribute to subcontractors and other applicable entities. Maintain one (1) copy for project record documents to be delivered to engineer at project completion.
3. Identification: Mark each copy to identify specific products, models, options, tolerances, dimensions, and other pertinent data.
4. Manufacturer's Standard Data: Modify drawings and diagrams to delete inapplicable information. Supplement to provide pertinent information unique to project.
5. Mechanical and Electrical Utilities, Equipment, and Appliance: Where not shown by shop drawings, include electrical characteristics, connection requirements, rough-ins, location of outlets, wiring, piping diagrams, controls, weight where significant, and as required to describe installation requirements. Correct published product data to correlate with specific project requirements.

E. ELECTRONIC FILES OF MANUALS (FROM VENDORS):

1. Electronic manuals must be submitted in .PDF and compatible with the latest version of Adobe Professional.
2. Color originals should be scanned to color images if possible.
3. A manual must be submitted as a single .PDF file; addendums and attachments (may or may not include drawings) should not be submitted separately, or in different file formats unless approved by engineer.

1.2 "OR EQUAL" CLAUSE OR SUBSTITUTIONS

A. GENERAL

When the engineer approves a substitution, it is with the understanding that the contractor guarantees the substituted article to be equal to, or better than, the article specified. The engineer will judge the suitability, reliability, and service availability of a proposed substitute. To be considered by the engineer, the request for substitution shall be accompanied with complete physical and technical data, manufacturer's catalogue data, photographs, samples, and the address of the nearest authorized service representative, as applicable.

The decision of the engineer on "OR EQUALS" shall be final.

A. AFTER BID OPENING

Proposed substitution and deviation requests shall be reviewed during the time of submittal review as part of the design process. (Bid Item 1)

Substitution and or deviation requests will be received and considered only when one or more of following conditions are satisfied:

1. The specified product or method of construction cannot be provided within the contract period and the contractor submittal is submitted within time frame allowed.
2. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
3. The specified product or method of construction cannot be provided in a manner that is compatible with other materials.
4. A substantial advantage is offered to the Owner, in terms of cost, time, or other considerations of merit.
5. The product as specified includes the statement, “or equal” and one of the above conditions governs

B. The engineer’s decision on all substitution or deviation requests shall be final. It is expected many of these design revisions will be determined to work identified in Bid Item 1 prior to the Notice to Proceed for Bid Item 2.

END OF SECTION

SECTION 01400 - QUALITY CONTROL

1.1 REFERENCE STANDARDS

Reference to standards, specifications, manuals or codes of any technical society, organization, or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest Standard Specification manual, code, or laws or regulations in effect at the time of opening of bids (or on the effective date of the agreement if there were no bids), except as may be otherwise specifically stated. However, no provision of any referenced standard, specification, manual, or code (whether or not specifically incorporated by reference in the contract documents) shall be effective to change the duties and responsibilities of Owner, contractor, or engineer, or employees from those set forth in the contract documents.

Any part of the work not specifically covered by these specifications shall be performed in accordance with the applicable section of the latest Edition of the "Standard Specifications for Road, Bridge and Municipal Construction" as prepared by the Washington State Department of Transportation and the Washington State Department of Public Works Association (APWA) as amended by the latest APWA Amendment No. 1 and the latest Owner's Amendment No. 1.

These specifications will herein be referred to as the Standard Specifications.

1.2 INSPECTION, TESTING AND CERTIFICATION

A. INSPECTION

Construction inspection and testing for the Owner will be performed by Mark Schmidt or others as the Owner may designate and as the construction situation may dictate. The Owner inspector will be responsible for ensuring that the contractor is complying with the contract plans and specifications.

1. The Owner will prepare a construction inspection checklist to be presented to the contractor at the preconstruction meeting. The checklist will include all inspections typically required by local, city and county officials as well as other items as deemed important by the engineer.
2. The contractor shall be required to contact the Owner 24 hours in advance of all the construction activities listed on the checklist, have the indicated activity inspected, and the Owner's inspector initial that the work was performed in accordance with the appropriate technical provision.
3. The checklist shall be posted near each structure and be available for review by the Owner at all times. These inspections shall be in addition to any required inspections by state or local jurisdictions. The Owner will prepare a suitable checklist for each building to be constructed and present same to the contractor at the preconstruction meeting.
4. Pre-final Inspection: Contractor shall notify the engineer in writing when all work or portions of work are complete and ready for inspection. The engineer will make a "punch list" and forward the results of same to the contractor who shall promptly correct any deficiencies noted.
5. Final Inspection: Contractor shall notify the engineer in writing when all punch list deficiencies have been completed. The engineer will promptly set a time for final inspection at which time the engineer and contractor shall jointly inspect the work. The contractor will promptly correct any further deficiencies noted.

B. LABORATORY SERVICES

Testing for quality control certification or special inspections as required by the permitting authority will be conducted by Owner and/or an independent laboratory which will be furnished and paid for by the Owner. Subsequent sampling and testing of rejected material shall be paid for by the contractor.

Failure of the material to achieve the specified density or standards will be just cause for rejecting any portion of, and/or all the material represented by the test. All costs associated with replacement materials or any delays caused by such failure shall be borne by the contractor.

It shall be the contractor's responsibility to prepare test specimens as required for special inspection as required by the permitting authority or the engineer and the cost shall be incidental to the contract.

C. PERMIT INSPECTIONS

The contractor shall comply with the requirements of all permits. It shall be the contractor's responsibility to contact the permitting authority and schedule all required inspections. The contractor shall notify the Owner of all scheduled inspections.

END OF SECTION

SECTION 01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

1.1 UTILITIES

A. SANITARY FACILITIES

Housing shall be provided for the sanitary necessities of all persons employed on the project, beginning with the first person employed and shall be of the chemical type. Such conveniences shall be erected and maintained by the contractor, in the number, manner, and place approved by the engineer immediately upon commencing work. The Sanitation Laws of the State of Washington and any applicable county sanitary laws shall be complied with.

E. TEMPORARY FIRE PROTECTION

Provide temporary fire protection until permanent systems supply fire protection needs.

1. Provide adequate numbers and types of fire extinguishers
2. Store combustible materials in fire-safe containers in fire-safe locations
3. Prohibit smoking in hazardous fire-exposure locations
4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

1.2 JOB SHACK

A. JOB SHACK

The contractor shall supply a job shack where construction plans shall be kept. The shack shall be large enough to keep **"AS-BUILT"** plans and provide access to Owner inspectors and engineers as required.

The contractor shall keep on the job site a full-size copy of the drawings and specifications and shall at all times give the engineer access thereto.

B. STORAGE AREA

The Owner will provide an open storage area to the contractor as shown on plans. The contractor will restore the storage area to its original condition at the end of the job. The contractor will provide security, as necessary, to safeguard its materials and machinery during construction.

1.3 SAFETY

A. WORK HAZARD ANALYSIS

The contractor and their subcontractors shall thoroughly review the scope of work of the proposed project. The contractor will be responsible to indicate a work hazard analysis on their format to include any known or potential safety issues or phases of construction that may require specific safety procedures as identified by WISHA or OSHA regulations, and/or prudent construction practices; i.e., shoring, fall protection, scaffolding, hazardous materials, asbestos removal, etc.

This report shall be completed and submitted to the engineer before the preconstruction conference. A copy of this report will be forwarded to the Owner's for review. A copy of this report shall be maintained at the work site (accessible to the engineer and project superintendent).

The Owner will review the submitted report and may require the contractor to clarify their safety procedures submitted or detail their procedures for ensuring safe working conditions for other working conditions not listed in the original submitted report; and/or explain how the procedures meet current safety regulations. In no case, may the contractor commence work until the Job Hazard Analysis Report has been reviewed and approved by the engineer.

1.4 DUST CONTROL

The contractor shall take reasonable measures to prevent unnecessary dust. Earth surfaces subject to dusting shall be kept moist with water or by application of a chemical dust suppressant. Dusty materials in piles or in transit shall be covered when practicable to prevent blowing.

1.5 TEMPORARY DRAINAGE PROVISIONS

Contractor shall provide for the drainage of storm water and such water as may be applied or discharged on the site in performance of the work. Drainage facilities shall be adequate to prevent damage to the work, the site, and adjacent property and be in compliance with all permits.

1.6 POLLUTION CONTROL

Contractor shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris, and other substances resulting from construction activities. No sanitary wastes will be permitted to enter any drain or watercourse other than sanitary sewers. No sediment, debris, or other substances will be permitted to enter sanitary sewers and reasonable measures will be taken to prevent such materials from entering any drain or watercourse.

The contractor shall maintain oil absorption pads on the actual job site whenever any equipment is present to immediately catch and contain any oil and/or fuel leaks.

The Contractor shall follow all requirements of the Department of Ecology approved Water Quality Protection Plan (WQPP). Should the erosion and sedimentation control measures initially installed prove to be inadequate, the contractor shall immediately install additional facilities as necessary to protect adjacent properties, sensitive areas, natural water sources and/or storm drainage systems.

The contractor shall identify a Pollution Control Inspector who will be on-site, or on-call and readily accessible to the site, at all times while construction activities are occurring that may affect the quality of ground and surface water.

The Pollution Control Inspector shall have the authority to ensure proper implementation of this Plan and impose additional corrective actions necessary because of changing field conditions. If the Pollution Control Inspector issues an order necessary to implement a portion of this Plan to prevent pollution from reaching the river, all the contractor's employees, shall immediately comply with that order.

No sanitary wastes will be permitted to enter any drain or watercourse other than sanitary sewers. No sediment, debris, or other substances will be permitted to enter sanitary sewers and reasonable measures will be taken to prevent such materials from entering any drain or watercourse.

The contractor shall maintain oil absorption pads on the actual job site whenever any equipment is present to immediately catch and contain any oil and/or fuel leaks.

END OF SECTION

SECTION 01600 - MATERIAL AND EQUIPMENT

1.1 QUALITY OF WORKMANSHIP AND MATERIAL

A. WORKMANSHIP

The contractor shall employ only competent, skillful, and orderly persons to do the work. If, in the engineer's opinion, a person is incompetent, disorderly or otherwise unsatisfactory, the engineer shall notify the contractor, in writing, of same. The contractor shall immediately discharge such personnel from the work and shall not again employ those person(s) on said contract again. Work shall conform to the highest industry standards.

B. MATERIALS

Materials shall be delivered to the project site in the manufacturer's original containers, bundles or packages unopened with the seals unbroken and the labels intact. Each type of material shall be of the same make and quality throughout. Manufactured articles, materials and equipment shall be installed in accordance with each manufacturer's written directions, unless otherwise specified.

All materials and equipment to be provided under this contract shall conform to the latest edition of the applicable codes, but in no case shall be contrary to the laws of the State of Washington and/or Federal Government.

The equipment supplied shall meet appropriate ANSI, OSHA, WISHA, and all Federal, state, and local standards for the type of equipment provided for its intended use.

Deliver, store and handle products according to manufacturer's written instructions, using means and methods that will prevent damage, deterioration, and loss, including theft.

1. Schedule delivery to minimize long-term storage and to prevent overcrowding construction spaces.
2. Deliver with labels and written instructions for handling, storing, protecting, and installing.
3. Inspect products at time of delivery for compliance with the contract documents and to ensure items are undamaged and properly protected.
4. Store heavy items in a manner that will not endanger supporting construction.
5. Store products subject to damage on platforms or pallets, under cover in a weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required.

SECTION 01700 - CONTRACT CLOSEOUT

1.1 DOCUMENTS REQUIRED UPON COMPLETION OF WORK

A. CLOSE OUT PROCEDURES

The contractor shall notify the engineer in writing when identified tasks are complete and ready for inspection. The engineer will make the inspection, forward the results of same to the contractor, who shall promptly correct any deficiencies noted.

The contractor shall notify the engineer in writing when all punch list deficiencies have been completed. The engineer will promptly set a time for final inspection, at which time the engineer and the contractor shall jointly inspect the work. The contractor will promptly correct any deficiencies noted.

It is possible that other contractors or the Owner will be working in the project area during the time of construction. It shall be the responsibility of this contractor to coordinate their work with all other agencies and/or contractors within the project area.

B. FINAL DOCUMENTATION

Upon completion of the work and before final payment is made, the contractor shall deliver to the engineer, in addition to such other items specified in these specifications, the following documents:

1. "AS-BUILT" Drawings

   "AS-BUILT" drawings and specifications of new or revised existing work, shown in red ink, provided by the general, mechanical, electrical contractors, and all other subcontractors, including all addendum's, change orders, deviations, changes, elevations, and dimensions of their work from the construction documents, updated monthly during the construction. Monthly payments may not be made until all redlined as-builts are updated.

   Two (2) copies of all shop and construction drawings used for the project, the final record drawings ("AS-BUILT" to reflect the actual installation) including one (1) reproducible set of all design drawings and AutoCAD files, if applicable.

   NOTE: The final payment for this contract will not be released until "AS-BUILT" drawings are received and approved by the engineer.

END OF SECTION

SECTION 02140 - DEWATERING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. Dewatering of excavations

1.02 DEFINITIONS

A. Dewatering is defined as pumping, diversion, channeling, coffer damming, drainage ditching, grading, etc., as required to keep construction excavation free from excessive water.

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. Provide all pumps, piping, dike materials, wiring and other electrical service, etc. as required to complete dewatering operations.

B. Maintain all dewatering equipment, drainage pipe, dike materials, etc. in an operable and safe condition in conformance with applicable local, state, and federal regulations.

PART 3 - EXECUTION

3.01 DEWATERING OF EXCAVATIONS

A Comply with State and federal permits throughout construction.

B. Keep excavations free from water at all times to facilitate backfilling, compaction, fine grading, and concrete placement.

3.01 DISPOSAL OF WASTE MATERIALS

A. Do not burn waste materials without permission and, if required, proper burning permits.

B. Remove all waste materials, including unsuitable and excess materials, from the site and disposal of offsite in a legal manner as directed by owner.

END OF SECTION

SECTION 02170 - COFFERDAMS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. Cofferdams

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cofferdam fill: Native material excavated from Puyallup River.

PART 3 - EXECUTION

3.01 CONSTRUCTION

A Place only materials of a size and density that they will not be carried away by stream flows prior to completion of the cofferdam.

B. Place initial course of boulders and cobbles to form downstream toe of cofferdam and effect partial diversion.

C. Follow initial course with additional courses of progressively finer material to seal cofferdam and raise to design lines and grades.

D. Impermeable membrane, if required to limit seepage.

1. Place impermeable membrane after cofferdam has reached final geometry.

E. Provide adequate pumping equipment to handle and dispose of the water without damage to adjacent property, or and other natural waterways.

F. Dispose of water from dewatering operations in an approved manner in accordance with state federal permits and environmental plans.

G. Protect natural slopes from any erosion induced by runoff or drainage water resulting from dewatering operations.

H. Remove all piping, cofferdams, umps and channels not required as permanent fixtures and restore streams and surroundings to their original state upon completion of construction activity. Dispose of all excess materials off-site.

I. Complete all in-stream construction activities during the prescribed times indicated in applicable permits and environmental plans.

J. At the completion of the diversion dewatering, the Owner and personnel from regulating agencies will inspect the trapped sediment upstream of the cofferdams and in sedimentation basins to determine appropriate disposal methods.

END OF SECTION

SECTION 02210 – EXCAVATION AND BACKFILL FOR STRUCTURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. Excavation for Structures
2. Backfill for Structures
3. Cleanup

1.02 REFERENCES

A. ASTM D 698

B. ASTM D 1557

1.03 DEFINITIONS

A. Structural excavation and backfill is defined as operations necessary for excavation of soil materials within the designated limit lines of the structure and backfilling of the structure to the final grade elevation as shown on the drawings or to math existing grade as directed by the engineer.

1.04 NOT USED

PART 2 - PRODUCTS

2.01 MATERIALS

A. General

1. Provide imported material or process native material of such size, graduation, and moisture condition that it can be readily compacted to the required densities.

2. Do not use gap-graded material.

3. Do not use material containing roots, brush, organic matter, perishable or objectionable material, trash mud, muck, or frozen material.

END OF SECTION

SECTION 02250 – RIP RAP

PART 2 - PRODUCTS

2.01 MATERIALS

Determination as to supply of rip rap materials will be determined as part of final contract negotiations. For bid purposes the Owner will provide all materials for installation by Contractor.

PART 3 - EXECUTION

2.01 CONSTRUCTION

A. Place rip rap on the surfaces and to the depths indicated on the drawings, or to match existing adjacent depths, insofar as is practical.

B. Place to grade so that larger and smaller rock fragments are uniformly distributed, and so that the smaller rock fragments fill in vids and result in a uniform graded surface.

C. Compaction is not required.

D. Exercise precaution to prevent damage where rip rap is placed adjacent to new or existing construction or impervious liner materials.

END OF SECTION

SECTION 03100 – CONCRETE FORMWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Selection Includes

1. Materials
2. Form Coatings
3. Construction
4. Form Removal
5. Field Quality Control

B. Related Sections

1. Section 03300 – Cast-In Place Concrete

1.03 NOT USED

PART 2 - PRODUCTS

2.01 MATERIALS

A. Forms

1. Provide forms of suitable materials and of the type, size, shape, quality and strength to build the structure as shown on the plans and as per ACI 347.

2. Provide forms with surfaces which are smooth and free from irregularities, dents, sags and holes.

3. Use form facing material which will produce smooth, hard, uniform texture on concrete.

4. Arrange forms in orderly and symmetrical fashion, with number of seams kept to practical minimum.

5. Do not use facing material with raised grain, patches or defects which will impair texture of concrete surface.

B. Form Ties: removable end, permanently embedded body type, having sufficient strength, stiffness and rigidity to support and maintain the form in proper position and alignment without the use of auxiliary spreader.

1. Provide at least a one (1) inch break back from adjacent outer concrete faces.

2. Constructed so that ends or end fasteners can be removed without causing appreciable spelling of concrete faces.

3. Cut off flush with formed surfaces when formed face of concrete is not to be permanently exposed to view.

4. Seal off ¾ inch (13 mm) diameter cones on both ends, for water retaining structures.

C. Apply form coating as required to prevent absorption of moisture, bonding with concrete and concrete stains.

2.02 NOT USED

PART 3 - EXECUTION

3.01 GENERAL

A. Design, furnish, place and remove concrete formwork used for cast-in-place concrete in accordance with these specifications and as shown on the drawings.

B. Tolerances

1. Do not exceed the following variations from plumb.

a. ¼ inch per 10 ft. in the lines and surfaces of walls and vertical faces, but not more than 1 inch.

2. Do not exceed the following variations from level or from the grades indicated on the drawings for footings and other conspicuous lines.

a.	In any bay or 20 feet maximum	¼ inch
b.	In 40 feet or more	½ inch

3. Do not exceed a variation of more than ¼ inch in the sizes and locations of sleeves, floor openings and wall opening to support owner supplied equipment.

4. Footings

a. Variation in dimensions in plan.

i.	Minus	½ inch
ii.	Plus	2 inches

b. Misplacement of eccentricity: 2 percent of the footing width in the direction of misplacement, but not more than 2 inches.

c. Reduction in thickness: below 5 percent specified thickness.

C. Construct forms true to line and grade, motor-tight, and sufficiently rigid and braced to prevent displacement and sagging between supports.

D. Remove and replace sections of forms the Engineer finds deficient in any respect.

E. Submit drawings to the Engineer showing the general design and dimensions for forms for structures upon request.

F. Design and construct the forms in accordance with, "Recommended Practice for Concrete Formwork" (ACI 347).

G. Construct forms so that they can be removed without injuring the concrete or concrete surface.

3.02 FORM COATING

A. Cover surfaces of forms with coating oil before placing reinforcing steel or concrete, unless factory applied non absorptive form liner is used.

B. Do not allow excess form coating material to stand in puddles informs nor in contact with hardened concrete against which fresh concrete is to be placed.

C. Avoid contact with reinforcement steel, keyways or other embedded materials. Thoroughly clean or replace any items which become coated with form oil.

3.03 CONSTRUCTION

A. Place chamfer strips in corners of forms to produce beveled edges on permanently exposed surfaces. Interior corner on such surfaces and edges of formed joints do not require beveling.

B. Use cambered formwork to compensate for anticipated deflections, to maintain specified tolerances.

C. Provide positive means of adjustment (wedges or jacks) of shores and struts and take up all settlement during concrete placing operation.

D. Securely brace forms against lateral deflection and displacement.

E. Provide temporary openings at base of wall forms and at other points where necessary to facilitate cleaning and observation immediately before concrete is placed.

F. Overlap hardened concrete with the surface of the form sheathing a minimum o f 1 inch at construction joints for flush surfaces exposed to view. Hold forms against hardened concrete to prevent offsets or loss of mortar at construction joint and to maintain true surface.

G. Fasten wedges (used for final adjustment of forms prior to concrete placement) in position after final check.

H. Prevent upward or lateral movement of any part of the formwork system during concrete placement by anchoring formwork to shores or other supporting surfaces or members.

I. Fill voids in sleeves, inserts, and anchor slots temporarily with readily removeable material to prevent entry of concrete.

J. As-cast finishes

1. Install form panels in orderly arrangement.

2. Locate form ties within joints, not within panel areas where panel joints are recessed or otherwise emphasized.

3.04 FORM REMOVAL

A. Do not pry against face of concrete; use only wooden wedges.

B. When repair of surface defects or finishing is required at an early age, remove forms as soon as concrete has hardened sufficiently to resist damage from removal operations.

C. Remove top forms on sloping surfaces of concrete as soon as concrete has attained sufficient stiffness to prevent sagging. Perform needed repairs or treatment required on such sloping surfaces at once, followed by specified curing.

D. Loosen wood forms for wall openings as soon as this can be accomplished without damage to concrete or structural integrity.

E. Do not remove forms for at least 24 hours from vertical faces, walls, columns and similar structures.

F. Do not remove forms supported by falsework under slabs until tests indicate that the design strength of the concrete has developed sufficiently to support its own weight and any approved superimposed load (do not exceed the design live load).

G. When forms are stripped, do not damage concrete or create excessive deflection or distortion.

H. Snap off the projecting end of the form ties upon removal of the forms.

3.05 FIELD OF QUALITY CONTROL

A. Observe formwork continuously while concrete is being placed to assure there are no deviations from desired elevation, alignment, plumbness, or camber.

B. If, during construction, any weakness develops and falsework show undue settlement or distortion, proceed with the following:

1. Stop work.
2. Remove affected construction if permanently damaged.
3. Strengthen falsework.

END OF SECTION

SECTION 03200 – REINFORCING STEEL

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Bending and Splicing
2. Placing Reinforced Steel
3. Placing Embedded Items

B. Related Sections

1. Section 03200 - Concrete Formwork
2. Section 03300 - Cast-In-Place Concrete

1.02 REFERENCES

A. CRSI Manual of Standard Practice

B. ACI 315

C. ACI 318

D. ASTM A 613

E. ASTM A 185

1.03 SUBMITTALS

A. Shop Drawings

1. Reinforcement drawings
2. Bar bending schedule

B. QA/QC Submittals

1. Materials certifications

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver reinforcement to the project site in bundles marked with tags (metal tags where possible) indicating bar size and length. Include the Mark Number corresponding to shop drawings on the tags.

B. Handle and store materials to prevent contamination and rusting.

1.05 NOT USED

PART 2 – PRODUCTS

2.01 MATERIALS

A. Reinforcing Steel: ASTM A 615 Grade 60 deformed new billet steel, free from flaws, cracks, mill scale, excessive rust, oil paint, dirt or other coatings that will destroy or reduce bonding capacity.

B. Welded Wire Fabric: ASTM A 185.

2.02 FABRICATION

A. Fabricate in accordance with ACI 315.

2.03 NOT USED

PART 3 - EXECUTION

3.01 BENDING AND SPLICING

A. Accurately form steel reinforcement to the dimensions indicated on the plans and in accordance with ACI 318.

B. Cold bend all bars.

C. Splice bars in accordance with ACI 318-83 and as shown on the plans.

D. Avoid splices of reinforcement at points of maximum stress.

E. Stagger splices with a minimum overlap of 30 bar diameters, but not less than 12 inches.

3.02 PLACING

A. Provide minimum concrete covering for reinforcement, within tolerances specified in ACI 318.

1. Concrete deposited against earth: 3 inches.
2. Formed surfaces exposed to weather or in contact with earth.
    a. For reinforcing bars No. 6 or larger: 2 inches.
    b. For reinforcing bars No. 5 or smaller: 1 – ½ inches.
3. Interior surfaces: ¾ inch.

B. Support all reinforcement and fasten together to prevent displacement beyond tolerances by construction loads or placing of concrete.

1. Provide supporting concrete blocks or other approved methods on the ground.

2. Use concrete, metal, plastic, or other approved bar chairs and spacers over formwork.

3. Where concrete surface will be exposed to weather in finished structure, cover all accessories with 1 – ½ inches of concrete or protect against corrosion.

C. Offset vertical bars in columns at least one bar diameter at lapped splices. Furnish templates for all column vertical bars and dowels to insure proper placement.

D. Splices not specifically indicated and mechanical connectors are subject to approval.

E. Do not tack weld reinforcing.

F. Assure that all reinforcement, at time concrete is placed, is free of materials that may adversely affect or reduce bond. Embed only clear reinforced steel free of loose scale.

G. Do not bend reinfor4cement after embedding in hardened concrete, unless permitted by Engineer.

H. Do not permit reinforcement or other embedded metal items bonded to concrete (except dowels in floor bonded on only one slope of joints) to extend continuously through any expansion joint.

I. Locate expansion joints as indicated.

3.03 PLACING EMBEDDED ITEMS (OWNER & CONTRACTOR FURNISHED)

A. Place all sleeves, inserts, anchors and embedded items required for adjoining work or for its support, prior to concreting.

B. Fill voids in embedded items temporarily with readily removable material to prevent entry of concrete.

C. Coordinate all installation requirements for Owner supplied materials with owner and material supplier.

END OF SECTION

SECTION 03300 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes

1. Ready-Mix Concrete
2. Tempering and Control of Mixing Water
3. Weather Conditions
4. Placing and Repair of Surface Defects
5. Finishing of Formed Surfaces
6. Slabs
7. Curing, Protection, and Stain Application
8. Chemical Stain Application
9. Testing, Evaluation, and Acceptance of Concrete and Structure

B. Related Sections

1. Section 03100 – Concrete Formwork
2. Section 03200 – Reinforcing Steel

1.02 REFERENCES

A. American Concrete Institute (ACI)

1. ACT 211 “Recommended Practice for Selecting Proportions for Concrete”.
2. ACI 301 “Specifications for Structural Concrete for Buildings”.
3. ACI 304 “Recommended Practice for Measuring, Mixing and Placing Concrete”.
4. ACI 305 “Recommended Practice for Hot Weather Concreting”.
5. ACI 306 “Recommended Practice for Cold Weather Concreting”.

B. American Society for Testing Materials (ASTM).

1. ASTM C 31 “Standard Method of Making and Curing Concrete Test Specimens in the Field”.
2. ASTM C 33 “Standard Specifications for Concrete Aggregates”.
3. ASTM C 39 “Standard Method of Test for Compressive Strength of Cylindrical Concrete Specimens”.
4. ASTM C 42 “Standard Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete”.

5. ASTM C 94 "Standard Specifications for Ready-Mixed Concrete".

6. ASTM C 138 "Standard Method of Test for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete"

7. ASTM C 143 "Standard Method of Test for Slump of Portland Cement Concrete".

8. ASTM C 150 "Standard Specification for Portland Cement".

9. ASTM C 171 "Standard Specification for Sheet Materials for Curing Concrete".

10. ASTM C 172 "Standard Method of Sampling Fresh Concrete."

11. ASTM C 173 "Standard Method of Test for Air Content for Freshly Mixed Concrete by the Volumetric Method".

12. ASTM C 231 "Standard Method of Test for Air Content of Freshly Mixed Concrete by the "Pressure Method".

13. ASTM C 260 "Standard Specification for Air-Entraining Admixtures for Concrete".

14. ASTM C 309 "standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete".

15. ASTM C 994 "Standard Specification for Preformed Expansion Joint Fillers for Concrete (Bituminous Type)".

16. ASTM D 1751 "Standard Specification for Preformed Expansion Joint Fillers for Concrete Paving the Structural Construction (Non-extruding and Resilient Bituminous Types)".

17. ASTM D 1752 "Standard Specification for the Preformed Sponge Rubber and Cork Expansion Joint fillers for Concrete Paving and Structural Construction".

18. ASTM E 329 "Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction".

1.03 SUBMITTALS

A. QA/QC Submittals

1. Proposed proportions for mix for each strength class and type of concrete.

2. Manufacturers certificate of compliance for Portland cement.

3. Furnish the following information on each delivery ticket for each load of concrete. Give tickets to Engineer's representative. The foreman will note location of concrete on the job.

a. Number of cubic yards.

b. Exact amount of cement (can be indicated either y eight or quantity).

c. Amount of sand (this can be indicated by weight or quantity).

d. Amount of gravel (can be indicated either by weight or quantity).

e. Amount of mixing water included moisture in aggregates (can be indicated either by weight or quantity).

f. If water is added at job site, note amount.

g. Amount of slump in inches.

h. Type of cement.

i. Amount of air-entrainment (if any) when delivered at job site.

j. Time batch was dispensed to truck.

1.04 STORAGE AND HANDLING

A. Store cement in weathertight buildings, bins or silos which will exclude moisture and contaminants.

B. Arrange and use aggregate stockpiles in a manner to avoid excessive segregation and to prevent contamination.

1.05 NOT USED

PART 2 – PRODUCTS

2.01 MATERIALS

A. Cement

1. Cement for normal concrete: ASTM C 150 Type II.

2. Cement for mass concrete ASTM C 150 Type II.

3. Cement for high early strength concrete: ASTM C 150 Type III.

B. Admixtures

1. Obtain Engineer's written approval for admixtures prior to placement of any concrete.

2. If allowed, conform admixtures to the following.

a. Air-entraining admixtures: ASTM C 260 or AASHTO M-154.

b. Water-reducing, retarding and accelerating admixtures; ASTM C 494.

c. Pozzolanic admixtures: ASTM C 618 Class N.

d. Slag cement: ASTM C 595.

C. Air entrainment: required for concrete exposed to weather or earth as follows:

1. For concrete with 3/8 inch and smaller aggregate: 6 – 10%.

2. For concrete with ¾ inch and smaller aggregate: 4 – 8%.

D. Mixing water for concrete: fresh, clean and potable.

E. Aggregates

1. Aggregates for normal concrete: ASTM C 33, 1 inch maximum size.

2. Aggregates for mass concrete: ASTM C 33, 1 ½ inch maximum size.

F. Store admixtures in such a manner as to avoid contamination, evaporation or damage.

2.02 PROPORTIONING

A. Proportion in accordance with ASTM C 94.

B. Select proportions of ingredients to produce the proper placability, durability, strength, and other required properties.

C. Proportion and produce concrete to have a slump of 3 inches, plus or minus 1 inch, unless otherwise permitted or specified.

D. Proportion and produce concrete to have a slump of 5 inches, plus or minus 1 inch, when placing with a pump truck, unless otherwise permitted of specified.

E. Maximum water-cement ratio.

1. Air-entrained concrete: 0.45

2. Non-air-entrained concrete: 0.58

2.03 STRENGTH

A. The specified minimum 28-day compressive strength of the concrete for each portion of the structure is designated below.

1. Normal Concrete 4000 psi

2. Mass Concrete (slurry only) 2000 psi

B. High early strength concrete.

1. Use for portions of the work to help facilitate construction scheduling requirements.

2. Minimum 7-day compressive strength: 3000 psi

2.04 EXPANSION JOINT

A. Use pre-molded expansion joint filler conforming to one of the following.

1. Bituminous type: ASTM D 994.

2. Non-extruding and resilient bituminous types: ASTM D 1751.

3. Sponge Rubber and Cork: ASTM D 1752.

2.05 WATERSTOP

A. Acceptable Materials.

1. Waterstop Rx as manufactured by Volclay

2. 6" PVC pre-molded waterstop meeting Corps of Engineers Specification CRD-C-572-74

2.06 NOT USED

PART 3 – EXECUTION

3.01 GENERAL

A. Concrete formwork is specified in Section 03100.

B. Concrete reinforcement is specified in Section 03200.

3.02 JOINTS AND EMBEDDED ITEMS

A. Construction Joints

1. Obtain prior approval for all joints from Engineer.

2. Construct and locate joints not shown in drawings so as to least impair the strength of the structure.

3. Position joints perpendicular to the main reinforcement.

4. Continue all reinforcement across joints.

5. Provide keys and inclined dowels as directed by the Engineer. Provide longitudinal keys at least 1 – ½ inch deep in all joints in walls and between walls and slabs of footings.

6. Clean surface of the concrete at all joints of all latency prior to placing adjoining concrete. Clean by sandblasting or high-pressure water jetting.

7. When required, obtain bond by use of an approved adhesive with prior approval of the Engineer.

B. Do not extend reinforcement or other embedded metal items bonded to the concrete (except dowels in floor bonded on only one side of joint) continuously through any expansion joint.

C. Water stops

1. Minimize the number of end joints by maximizing the practical length of each pierce of pre-molded water stop.

2. Construct joints at intersections and at end of pierces in the manner most appropriate to the material being used, and such that joints develop not less than 50 percent of the mechanical strength of the parent section, and permanently retain their flexibility.

3. Comply with manufacturer's recommendations for splices and other required joints and install and secure as per manufacturer.

4. Take special care to immobilize and retain position of water stop during concrete placement.

D. Other Embedded Items

1. Place all sleeves, inserts, anchors and embedded items required for adjoining work or for its support prior to concreting.

2. Coordinate all work with all requirements for owner supplies materials.

E. Placing Embedded Items

1. Position and support expansion joint material, water stops and other embedded items against displacement.

2. Temporarily fill voids in sleeves, inserts and anchor slots with readily removable material to prevent the entry of concrete into the voids.

3.03 READY-MIX CONCRETE

A. Batch, mix and transport ready-mix concrete in accordance ASTM C 94.

3.04 TEMPERING AND CONTROL OF MIXING WATER

A. Mix concrete only in quantities for immediate use.

B. Do not re-temper concrete which has set.

3.05 WEATHER CONDITIONS

A. Cold Weather

1. Notify, in advance, the Engineer when concrete operations are scheduled during cold weather conditions (temperature less than 40°F).

2. Perform cold weather concrete placement in compliance with ACI 306.

3. Cover or blanket concrete to prevent freezing.

3.06 PLACING

A. Preparation Before Placing

1. Remove hardened concrete and foreign materials from the inner surfaces of the conveying equipment.

2. Sprinkle semi porous subgrade sufficiently to eliminate suction.

3. Seal porous subgrades in an approved manner.

4. Complete formwork.

5. Remove snow, ice and water.

6. Secure reinforcement in place.

7. Position expansion joint material, anchors, and other embedded items.

8. Do not place concrete on frozen ground.

B. Conveying

1. Handle concrete from the mixer to the place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of ingredients, and in a manner to assure that the required quality of the concrete is maintained.

2. Convey concrete with equipment of a size and design such that detectable setting of concrete does not occur before adjacent concrete is placed.

3. Clean conveying equipment at the end of each operation or workday.

4. Pumping or pneumatic conveying equipment.

a. Provide equipment with adequate pumping capacity.

b. Control pneumatic placement so that segregation is not apparent in the discharged concrete.

c. Do not exceed a loss of 2 inches of slump in pumping or pneumatic conveying.

d. Do not convey concrete through pipe made of aluminum or aluminum alloy.

C. Depositing

1. General

a. Deposit concrete continuously, or in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section.

b. Locate construction joins as approved if a section cannot be placed continuously.

c. Place concrete as such a rate that the concrete which is being integrated with fresh concrete is still plastic. Do not deposit concrete which has partially hardened or has been contaminated by foreign materials.

2. Segregation

a. Deposit concrete as nearly as practicable in its final position to avoid segregation due to re-handling or flowing.

b. Do not subject concrete to any procedure which will cause segregation.

c. Do not allow concrete to free fall over

3. Consolidation

a. Consolidate concrete by vibration so that the concrete is thoroughly worked around the reinforcement, around embedded items, and into corners of forms, elimination all air or stone pockets which may cause honeycombing, pitting, or planes of weakness.

D. Protection

1. Do not place concrete during rain, sleet or snow, unless adequate protection is provided, and Engineer's approval is obtained.

2. Do not allow rainwater to increase the mixer water nor damage the surface finish.

E. Bonding

1. Immediately prior to placing of fresh concrete, dampen (but do not saturate) the hardened concrete of construction joints and of joints between footings and walls or columns between walls or columns and beams or floors they support, joints in unexposed walls and all other not mentioned below.

2. Prepare joints receiving an adhesive and apply adhesive in accordance with the manufacturer's recommendations, prior to placing of fresh concrete.

3.07 REPAIR OF SURFACE DEFECTS

A. Repair surface defects including tie holes, unless otherwise specified by the contract documents, immediately after form removal.

B. Repair of Defective Areas

1. Honeycombed and other defective concrete

a. Remove down to sound concrete.

b. If chipping is necessary, locate edges perpendicular to the surface or slightly undercut. No feather edge will be permitted.

c. Dampen the area to be patches and an area at least 6 inches wide surrounding it, to prevent absorption of water from the patching mortar.

d. Prepare bonding grout using a mix of approximately 1-part cement to 1- part fine sand passing a No. 30 mesh sieve, mixed to the consistency of thick cream, and then brush well into the surface.

2. Patching mixture

a. Make patching mixture of the same materials and of approximately the same proportion as used for the concrete, except omit coarse aggregate and mix motor with not more than 1 part

b. Substitute white Portland cement for a part of the gray Portland cement on exposed concrete in order to produce a color matching the color of the surrounding concrete, as determined by a trial patch.

c. Do not add more mixing water than necessary for handling and placing.

d. Mix the patching mortar in advance and allow to stand with frequent manipulation with a trowel, without addition of water, until it has reached the stiffest consistency that will permit placing

3. Mortar application

a. Brush the bond coat well into the surface after surface water has evaporated from the area to be patched.

b. Apply7 the premixed patching mortar when the bond coat begins to lose the water sheen.

c. Thoroughly consolidate the mortar into place and strike off so as to leave the patch slightly higher than the surrounding surface.

d. Leave undisturbed for at least one hour before finally finished to permit initial shrinkage.

e. Keep the patch area damp for 7 days.

f. Do not use metal tools in finishing a patch in a formed wall which will be exposed.

C. Tie Holes

1. Clean and thoroughly dampen.

2. Fill solid with patching mortar.

D. Approved proprietary compounds for adhesion or as patching ingredients may be used in lieu of or in addition to the foregoing patching procedures. Use compounds in accordance with the manufacturer's recommendations.

3.08 FINISHING OF FORMED SURFACES

A. Give the concrete surfaces one or more of the finishes specified below upon removal of the forms, in locations designated by the drawings or as specified.

B. When required to match a small finish sample, reproduce the sample finish on an area in a inconspicuous location designated by the Engineer before proceeding with the finish in the specified location.

C. As-cast Finishes

1. Rough-form finish

a. Patch tie holes and defects.

b. Chip or rub off fins exceeding ¼ inch in height.

2. Smooth-form finish

a. Form-facing material: plywood, temper concrete-form-grade hardboard, metal plastic, paper or other approved material capable of producing a smooth, hard uniform texture on the concrete.

b. Arrange facing material in a orderly and symmetrical manner, with the number of seams kept to the practical minimum.

c. Support facing material by studs or other backing capable of preventing excessive deflection.

d. Do not use material with raised grain, torn surfaces, worn edges, patches, dents or other effects which will impair the texture of the concrete surface.

e. Patch tie holes and defects.

f. Remove all fins.

D. Related Unformed Surfaces

1. Strike smooth and float tops of walls or buttresses, horizontal offsets and similar unformed surfaces occurring adjacent to formed surfaces, to a texture reasonably consistent with that of the formed surfaces.

2. Continue final treatment on formed surfaces uniformly across the unformed surfaces.

3.09 SLABS

A. Subgrade for Slabs on Ground.

1. Provide subgrade that is well drained and of adequate and uniform load bearing nature, with an in-place density equal to at least the minimum required in the specifications.

2. If the temperature where concrete is to be placed is below freezing, raise and maintain above 50° F long enough to remove all frost from the subgrade, as directed by the Engineer.

3. If necessary, dampen with water in advance of concreting.

4. Do not place concrete with free water standing on the subgrade or any muddy or soft spots.

B. Edge Forms and Screeds

1. Set edge forms and intermediate screed strips accurately to produce the designated elevations and contours of the finished surface.

2. Provide edge forms and intermediate screed strips sufficiently strong to support vibrating screeds or roller pipe screeds if the nature of the finish specified required the use of such equipment.

3. Align the concrete surface to the contours of screed strips by the use of strike-off templates or approved compacting type screeds.

4. When formwork is cambered, set screeds to alike camber to maintain the proper concrete thicknesses.

C. Placement

1. Carefully coordinate mixing and placing with finishing

2. Do not place concrete on the subgrade or forms more rapidly than it can be spread, straight edged, and darbied or bull floated. These operations must be performed before bleeding water has an opportunity to collect on the surface.

3. To obtain good surfaces and avoid cold joints, plan the size of finishing crews with due regard for the effects of concrete temperature and atmospheric conditions on the rate of hardening of the concrete.

D. Joining

1. Provide joints in slabs on grade as shown on the drawings.

2. If saw-cut joints are required or permitted, time cuttings properly with the set of the concrete.

a. Start cutting as soon as the concrete has hardened sufficiently to prevent aggregates being dislodged by the saw.

b. Complete cutting before shrinkage stresses become sufficient to produce cracking.

E. Consolidation

1. Thoroughly consolidate concrete in slabs.

2. Use internal vibration in beams and girders of framed slabs and along the bulk heads of slabs on grade.

3. Obtain consolidation of slabs with vibrating screeds roller pipe screeds, internal vibrators, or other approved means.

F. Finishes

1. Scratched finish.

a. After the concrete has been placed, consolidated, struck off, and leveled to a tolerance of ¼" in 10 feet, roughen the surface with stiff brushes or rakes before final set.

2. Floated finish.

a. After the concrete has been placed, consolidated, struck off, and leveled, do not work the concrete until ready for floating.

b. Begin floating when the water sheen has disappeared and when the surface has stiffened to permit the operation.

c. During or after the first floating, check planeness of surface with a 20-foot straight edge applied at not less than two different angles.

d. Cut down all high spots and fill all low spots during this procedure to produce a surface within a tolerance of ¼" in 10 feet throughout.

e. Refloat the slab immediately to a uniform sandy texture.

3. Troweled finish.

a. Float-finish the surface.

b. Power trowel and finally hand trowel the surface.

c. The first troweling after power floating should produce a smooth surface which is relatively free of defects, but which may still show some trowel marks.

d. Additional troweling should be done by hand after the surface has hardened sufficiently.

e. Thoroughly consolidate the surface by the hand troweling operations.

f. The finished surface should be essentially free of trowel marks, uniform in texture and appearance. Plane to a tolerance of approximately 18 inch in 10 feet, except tolerance for concrete on metal deck of ¼ inch in 10 feet.

g. On surfaces intended to support floor coverings, remove any defects of sufficient magnitude to show through the floor covering by grinding.

4. Broom finish – Immediately after the concrete has received a float finish, give a coarse transverse scored texture by drawing a broom across the surface. The finish should be uniform throughout.

G. Unspecified Finish

1. When type of finish is not specified in the contract6 documents, use the following finishes as applicable.

a. Scratched finish – For surfaces intended to receive bonded applied cementitious applications.

b. Floated finish – For surfaces intended to receive waterproofing membranes and surfaces exposed to flowing water.

c. Troweled finish – For interior floors intended as walking surfaces or to receive floor coverings.

d. Broom or belt finish – For exterior sidewalks and ramps.

3.010 CURING AND PROTECTION

A. General

1. Begin curing immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures and mechanical injury.

2. Maintain with minimal moisture loss at a relatively constant temperature for the period necessary for hydration of the cement and hardening of the concrete.

3. The materials and methods of curing are subject to approval.

B. Preservation of Moisture

1. For concrete surfaces not in contact with forms, apply one of the following procedures immediately after completion of placement and finishing.

a. Pond or continuous sprinkling.
b. Application of absorptive mats or fabric kept continuously wet.
c. Application of sand kept continuously wet.
d. Continuous application of steam (not exceeding 150°F) or mist spray.
e. Application of waterproof sheet materials conforming to ASTM C 171.
f. Application of other moisture retaining coverings as approved.
g. Application of a curing compound conforming to ASTM C 309.

i. Apply compound in accordance with the recommendations of the manufacturer immediately after any water sheen which may develop after finishing has disappeared from the concrete surface.

ii. Do not use on any surface against which additional concrete or other material is to be bonded unless it is proved that the curing compound will not prevent bond, or unless positive measures are taken to remove it completely from areas to receive bonded applications.

2. Minimize moisture loss from surfaces placed against wooden frames or metal forms exposed to heating by the sun by keeping the forms wet until they can be safely removed.

3. Cure for at least 7 days in the case of all concrete except high-early-strength concrete for which the curing is at least 3 days.

4. Alternatively, if tests are made of cylinders kept adjacent to the structure and cured by the same methods, moisture retention measures may be terminated when the average compressive strength has reached 70 percent of the specified strength.

C. Protection from Mechanical Injury

1. During the curing period, protect the concrete from damaging mechanical disturbances, such as load tresses, heavy shock and excessive vibration.

2. Protect all finished concrete surfaces from damage by construction equipment, materials or methods, by application of curing procedures, and by rain or running water.

3. Do not load self-supporting structures in such a way as to overstress the concrete.

3.011 CHEMICAL STAIN APPLICATION

A. Surfaces to receive chemical stains.

1. Prepare by removing all dust, paint, plaster, oils and waxes, curing compounds, and other marks, and drying all surfaces.

2. Allowed to cure one month before application of any stain.

B. Apply stain with acid-resistant spray equipment, starting at the bottom, working upward and avoiding excessive rundown.

C. Allow the first coat to dry a minimum of 8 hours before second coat is applied.

3.012 TESTING

A. General

1. Concrete materials and operations will be tested and inspected as the work progresses.

2. Furnish any necessary labor to assist the Owner in obtaining and handling samples as the project or other sources of materials.

3. Advise the Owner sufficiently in advance of operations to allow for completion of quality tests and for the assignment of personnel.

4. Provide and maintain for the sole use of the Owner, adequate facilities for safe storage concrete test specimens on the project site for the first 24 hours as required by ASTM C 31.

B. Testing Frequency

1. Concrete materials will be sampled at each separate placement Test every 50 cubic yards or a portion thereof placed each day for slump and air content to assure compliance with the specifications.

2. Take a minimum of four cylinders for compressive strength tests for each placement of 150 cubic yards or portion thereof placed each day, or for each 4,000 square feet of surface for slabs and walls.

3. The Owner or the testing personnel may take additional tests as they deem necessary.

4. Represent each specified mix design with at least three sets of cylinders for evaluation of potential strength and uniformity.

3.013 EVALUATION AND ACCEPTANCE OF CONCRETE

A. Evaluation of Compressive Strength Test Results

1. The Owner will test concrete cylinders in accordance with procedures specified in ASTMC39 and C 31.

2. Concrete strength will be considered satisfactory so long as strength tests at 28 days equal or exceed the specified strength.

B. Testing of Concrete in Place

1. Completed concrete work which fails to meet compressive strength requirements may be further tested by core tests.

2. Nondestructive testing by impact hammer, sonoscope, or other nondestructive device may be permitted by the Owner to determine relative strengths at various locations in the structure as an aid in evaluating concrete strength in place for selecting areas to be cored. Such tests, unless properly calibrated and correlated with other test data, will not be used as a basis for acceptance or rejection.

3. Core Tests

a. When required and allowed, obtain cores at least 2 inches in diameter.

b. Owner will test cores in accordance with STM C 42.

i. If the concrete in the structure will be dry under service conditions, air dry the cores (temperature 60° to 80°F, relative humidity less than 60 percent) for 7 days before test and test dry.

ii. If the concrete in the structure will be more than superficially wet under service conditions, test the cores after moisture conditioning in accordance with ASTM C 42.

c. Take at least three representative cores from each member of area of concrete in place that is considered potentially deficient.

i. The location of cores will be determined by the Engineer so as to least impair the strength of the structure.

ii. If, before testing, one or more of the cores shows evidence of having been damaged, subsequent to or during removal from the structure, replace the core.

d. Concrete in the area represented by a core test will be considered adequate if the average strength of the cores is equal to at least 85 percent of the ultimate compressive strength and if no single core is less than 85 percent of the specified strength.

3.014 ACCEPTANCE OF STRUCTURE

A. Completed concrete work which fails to meet one or more requirements, but which has been repaired to bring it into compliance will be accepted without qualification.

B. Completed concrete work which fails to meet one or more requirements and which cannot be brought into compliance may be accepted or rejected as provided in these specifications. In this event, modifications may be required to assure that remaining work complies with the requirements.

C. Appearance

1. Concrete exposed to view with defects which adversely affect the appearance of the specified finish may be repaired only by the approved methods.

2. Concrete not exposed to view is not subject to rejection for defective appearance except for surfaces exposed to flowing water.

END OF SECTION

SECTION 03400 – PRE-CAST CONCRETE (IF USED ON PROJECT)

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Junction vaults for underground utilities.
2. Precast panels to be used in forming process (if used).

B. Modifications to specifications will be allowed during final design phase.

1.02 REFERENCES

A. ASTM A615

B. ASTM C150

C. ASTM C478

D. AASHTO HA-20

E. ACI 318

F. PCI-116

1.03 SUBMITTALS

A. Shop Drawings

1. Layout, fabrication details, reinforcement, embedded items, dimensions, openings and knockouts.
2. Junction and pulling vault locations.

1.04 DESIGN REQUIREMENTS

A. Design, size, and manufacture vaults in accordance with ASTM C478.

B. Size components to withstand design loads as follows.

1. AASHTO HA-20 loading
2. Saturated unit weights of soil: 135 pcf
3. At rest soil coefficient: Ko = 0.6
4. Depth to top of manhole: 0 feet

C. Calculate structural properties of components in accordance with ACI 318.

D. Provide each vault with a sump located in the center of the vault floor. Minimum sump size 12 inches diameter.

E. Provide vaults of the single or multiple section type. Multiple section rinds must fit together watertight.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cement: Grey Portland, confirming to ASTM C150, Type II or III.

B. Aggregate, Sand, Water, Admixtures: Determined by precast fabricator as appropriate to design requirements and PCI-116.

C. Minimum concrete compressive strength: 3000 psi.

D. Reinforcing Steel: ASTM A615, Grade 60, deformed steel bars, uncoated.

E. Junction vault: Model 504-LA as manufactured by Utility Vault Company, Inc., Auburn, WA, or equal. Provide vault with mounting ring and cast- iron cover with the word ELECTRICAL cast into the top surface.

F. Pulling vault: Model 575-LA as manufactured by Utility Vault Company, Inc., Auburn, WA, or equal. Provide vault with mounting ring and cast- iron cover with the word ELECTRICAL cast into the top cover.

G. Vault Accessories

1. Furnish junction and pulling vaults with galvanized cable support racks on galvanized framing channels into the walls.

2. Furnish junction and pulling vaults with a pulling eye suitable for a 5,000 lbs. loading cast into each face which is opposite a conduit entry.

PART 3 - EXECUTION

3.01 INSTALLATION

A. As agreed upon with Owner if used on project.